DOCUMENT RESUME

ED 157 756 SE 024 757

TITLE Training for Certification: Trainer's Guide.
INSTITUTION Mississippi State Univ., State College. Cooperative Extension Service.
PUB DATE [77]
NOTE 148p.; For related documents, see SE 024 752-756; Not available in hard copy due to marginal legibility of original document

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Certification; *Environmental Criteria; Environmental Education; Environmental Technicians; Extension Agents; *Extension Education; *Pesticides; Public Health; Quality Control; Scripts; *Teaching Guides
IDENTIFIERS *Mississippi State University

ABSTRACT

This Cooperative Extension Service publication from Mississippi State University is a teacher's guide for a private pesticide applicator certification training program. This guide is designed for use by county extension agents. Contents include: (1) a suggested training schedule; (2) stepwise instructions for implementation of the private applicator training program; (3) an excerpt from the Federal Register concerning certification of pesticide applicators; (4) newspaper and radio press releases; (5) four slide show scripts; and (6) training and scheduling materials. The bulk of the publication consists of the training slide show scripts. Much of the material in this publication is specific for Mississippi but it can be used in developing training programs in other states. (HM)

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training for certification

Cooperative Extension Service
Mississippi State University

Trainer's Guide

SE 024 757

FORWARD

The pesticide applicator training program is probably the largest, both locally and nationally, that the Extension Service has been involved with, and has the potential of touching every producer in the country. The program had its beginning in 1972 when Congress amended the Federal Insecticide, Fungicide and Rodenticide Act. The Act as amended by Congress states: (1) that all pesticide uses be classified as either General or Restricted and (2) it requires that individuals be certified as competent to apply pesticides which are labeled as Restricted.

In order to insure that applicators were in compliance with the Law, the Extension Service was charged with the responsibility of developing training materials and with the subsequent training of applicators. You as the County Agents were given the job of training the Private Pesticide Applicators. This group as a whole constitutes, by far, the largest number of pesticide applicators. In Mississippi alone, we are dealing with approximately 94,000 individuals.

To aid you in your program a study manual for Private Pesticide Applicators has been developed and covers such areas as: Law and Regulations, Recognition of Pests, Safety and Label Comprehension, and Application Equipment. A slide/cassette series which supplements this manual is also being made available for use by each agent.

The ideas and suggestions in this guide were developed to further assist you in your training programs. As the title states, this material is meant only as a guide. If you, as the trainer, have additional training aids, materials, or suggestions do not hesitate to incorporate them into your program.

SUGGESTED SCHEDULE FOR

IMPLEMENTATION OF PRIVATE APPLICATOR

TRAINING FOR CERTIFICATION

Date	Activity Schedule
December 9	Commercial Core Manual Training for County Agents and Specialists
December 10	Category 10 (Demonstration and Research) Training for County Extension Agents and Specialists
December 11	Audio-Visual Equipment Training
December 16-18	Make-up session, same as December 9-11 - Training for County Agents, Specialists and principally District Entomologists with the Division of Plant Industry.
January 1	Encourage the completion and mailing of registration forms for commercial applicators to the Division of Plant Industry
January 31	Submit training schedule before January 31. or if training is to be initiated prior to this date, submit schedule in advance of meeting(s) ...to... Jim Hamer, Ted Brook, or James Jarratt, Drawer EM Mississippi State, Miss. 39762
January 31 thru October 17, 1976	Maintain records of attendance files for Certification - Files collected bi-weekly by Division of Plant Industry or as requested.
October 21, 1976	After this date all purchases and uses of restricted use pesticides can be made only by certified applicators.
After October 1976	Maintain records of attendance files for certification

STEPWISE INSTRUCTIONS FOR IMPLEMENTATION OF TRAINING FOR PRIVATE APPLICATORS

1. Familiarize yourself with the Federal Insecticide, Fungicide, Rodenticide Act of 1972 as well as other informational materials provided for training.

2. Develop County Plan - Establish mailing lists, dates, locations, and procedures for acquiring maximum participation of private applicators.

3. Present this program to the County Extension Staff including county-wide implementation procedures, materials for training and actual private applicator slide presentations.

4. Announce and explain program to county organizations, clubs, and other organized groups and solicit assistance where appropriate.

5. Initiate mass media publicity campaign - which could include "canned" materials provided in the Trainer's Manual. This program should be publicized through the conventional methods utilized in county situations.

   (a) Newsletters
   (b) Radio
   (c) News releases
   (d) Personal letters
   (e) Newspaper articles
   (f) Television
   (g) Organizational announcements
   (h) Bulletins, leaflets

6. Conduct scheduled audio-visual training meetings as outlined in the county plan. For specific instructions and sample program see appropriate sections in trainer's manual.

7. Maintain record of attendance file for use by Division of Plant Industry, Mississippi Department of Agriculture.

8. Attempt to complete training of private applicators by October 1, 1976.

federal register

WEDNESDAY, MARCH 12, 1975
WASHINGTON, D.C.
Volume 40 ■ Number 49

PART III

ENVIRONMENTAL PROTECTION AGENCY

■

CERTIFICATION OF PESTICIDE APPLICATORS

State Plans for Certification of Commercial and Private Applicators

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 240-6]

PART 171—CERTIFICATION OF PESTICIDE APPLICATORS

Submission and Approval of State Plans for Certification of Commercial and Private Applicators of Restricted Use Pesticides

On January 13, 1975, notice was published in the FEDERAL REGISTER (40 FR 2328) proposing regulations for State plans for the certification of commercial and private applicators; for a plan to qualify certain Federal employees; and for plans for the certification of applicators on Indian reservations not subject to State jurisdiction. The following regulations are designed to ensure that the State and Indian plans for the certification of applicators and the Government Agency Plan (GAP) to qualify certain Federal applicators for certification satisfy all the requirements of Section 4 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (86 Stat. 973), and the standards for the certification of applicators of restricted use pesticides (40 CFR 171.1–6) which were published on October 9, 1974, in the FEDERAL REGISTER (39 FR 36446).

STATUTORY AUTHORITY

Section 4(a)(2) of the Act provides that:

> If any State at any time, desires to certify applicators of pesticides, the Governor of such State shall submit a State plan for such purpose. The Administrator shall approve the plan submitted by any State, or any modification thereof, if such plan in his judgment—
>
> (A) designates a State agency as the agency responsible for administering the plan throughout the State;
>
> (B) contains satisfactory assurances that such agency has or will have the legal authority and qualified personnel necessary to carry out the plan;
>
> (C) gives satisfactory assurances that the State will devote adequate funds to the administration of the plan;
>
> (D) provides that the State agency will make such reports to the Administrator in such form and containing such information as the Administrator may from time to time require; and
>
> (E) contains satisfactory assurances that State standards for the certification of applicators of pesticides conform with those standards prescribed by the Administrator under [Section 4(a)(1) of the amended FIFRA].
>
> Any State certification program under this section shall be maintained in accordance with the State plan approved under this section.

Section 4(b) of the Act further provides procedures for the rejection or acceptance of State plans by the Administrator, and for the notification of the State when it is determined that the certification program is not being administered in accordance with the approved State plan.

Section 25(a) of the Act provides that "the Administrator is authorized to prescribe regulations to carry out the provisions of this Act."

COMMENTS

Written comments on the proposed regulations for State plans were invited and received from interested parties. All of the comments have been reviewed and are on file with the Agency. Certain comments have been incorporated into the regulations for State plans. Some of the revisions involved editorial changes for purposes of clarification. Other clarifications are included in the explanatory remarks of the revised Preamble below. Significant comments, modifications, and policy issues are described below.

The comments fall into general comments and specific comments about particular sections of the proposed regulations. The significant comments and the Agency's responses to the comments are described below:

1. GENERAL COMMENTS

Guidelines/Regulations. A few State lead agency officials expressed regret that the proposed State plan requirements were issued as proposed regulations rather than proposed guidelines, as had been considered earlier. Apparently these expressing this view believe that issuance of these rules as guidelines would allow greater flexibility in their application, than would be the case if the rules were issued as regulations. It should be understood that the extent to which rules are flexible or prescriptive is controlled not by how they are titled, but rather by the language of the provisions themselves. Essentially, use of prescriptive language (i.e., "shall", "must") indicates prescription, while use of permissive language (i.e., "should", "may") indicates flexibility. This set of regulations contains provisions of both varieties. However, the Agency considers that these regulations reflect its best judgment regarding the elements necessary for a well-rounded, State-administered certification program capable of satisfying the intent and purpose of Section 4 of the Act. Accordingly, States submitting plans lacking an element or elements which should be present pursuant to these regulations should be prepared to satisfy the Agency that the missing element or elements are not necessary for an effective applicator certification program in that State, because of special local circumstances, compensating provisions in the Plan, or other convincing reasons.

Private Applicator Certification. Comments from certain organizations expressed concern that the proposed regulations would have an adverse impact on the ability of farmers and ranchmen to produce an abundance of healthful food and fiber at a reasonable cost to consumers. There was special concern about the possibility of great numbers of farmers being required to demonstrate their competency by passing a competitive written examination. It should be noted that the present regulations do not address such questions as the type of system to be used in certifying applicators or the standards to be applied in determining the competence of applicators. These subjects were dealt with in an earlier rulemaking proceeding pursuant to section 4(a)(1) of the amended FIFRA, which requires the Agency "to prescribe standards for the certification of applicators of pesticides." That rulemaking proceeding, which was concluded on October 9, 1974, resulted in the promulgation of 40 CFR 171.1–6. The present regulations incorporate these standards and make them elements of State plans. In doing so, however, the Agency is following the mandate of the amended FIFRA that the applicator certification programs described in the State plans must utilize procedures and standards conforming with and at least equal to the applicator certification standards promulgated by the Agency pursuant to section 4(a)(1) of the amended FIFRA.

The Agency is fully aware of the need to implement the applicator certification program in a manner that is reasonable and which causes minimum disruption to the agricultural community. At the same time, the Agency must assure that State programs adhere fully to the mandate of the amended FIFRA to protect man and the environment from the possible harmful effects of pesticide use. It is reasonable to understand that the amended FIFRA, if properly implemented, will be beneficial and not detrimental to farmers and the nation in ensuring an abundance of food, feed and fiber for the future, as well as the present. Certification, for example, will allow the use of pesticides that might not otherwise be available if there were no assurances that such highly toxic products are to be used only by individuals who have demonstrated their competency to use them properly and safety. In addition, it is important to realize that the use of pesticides by competent individuals will protect crops, as well as life and the environment. Misuse of pesticides not only threatens life and the environment, but results in damage to crops and may well keep the very products the farmer is trying to protect off the market because of damage and illegal pesticide residues.

The Agency believes that most farmers who are currently using pesticides in a proper, safe manner will experience little difficulty in meeting the certification standards (40 CFR 171.1–6). For example, § 171.6 which established procedures for certifying private applicators, provides that farmers may be certified by a written, or oral testing procedure, or such other equivalent system as may be approved as part of a State plan. EPA is currently working with State officials and others to develop acceptable "equivalent" systems. States may also wish to submit, if necessary, procedures for interim certification with specific plans for upgrading on a specific time schedule. Some States have indicated that it may be necessary to take this route. Such procedures could allow for step-by-step implementation which will lessen the impact both with the farmers and the State agencies during the first years of implementing the certification program. It

should be recognized, however, that these interim procedures may in the long run be more costly and troublesome. Nevertheless, the Agency is making every effort to allow States flexibility in developing certification programs that meet their own situations and needs, within the limits of the intent and purpose of section 4 of the amended FIFRA.

Enforcement Provisions. Comments were received expressing the position that the Agency has no authority to include any enforcement provisions as elements of an approvable State plan. Apparently, it is the view of these commenters that Congress intended that State programs under section 4(a)(2) of the Act would only determine competence of applicators and issue credentials, and that the other necessary components of a meaningful regulatory program would be performed by EPA. In the Agency's view, it is clear that Congress intended that State programs under section 4(a)(2) of the Act be full, well-rounded, and meaningful regulatory programs with enforcement elements—not partial programs requiring supplementation by this Agency. Moreover, it is apparent that the enforcement elements set out in these regulations (e.g., provisions for denial, suspension, and revocation of certification, criminal or civil penalties, record keeping, and right-of-entry) are reasonable and necessary for the administration of an applicator certification program which will serve the purpose and the intent of the Act.

Changing Technology and Continuing Competency. Pest control companies and associations expressed objections to § 171.8(a)(2) which requires provisions to ensure that certified applicators continue to meet the requirements of changing technology and to assure a continuing level of competence and ability to use pesticides safely and properly. These commenters questioned EPA's authority to include these provisions as an element of an approvable State plan, and voiced even stronger objection to the preamble discussion of "special examinations" or "periodic reexaminations" as optional approaches to meet the needs of changing technology. The concern was that mentioning these approaches as options would "mislead" State officials into thinking they were requirements, notwithstanding the fact that the preamble discussion indicated that other options, including a continuing training program, may be preferable.

The Agency regards as clear its legal authority to require as an element of a State plan some provision to ensure that certified applicators continue to meet the requirements of changing technology and to assure a continuing level of competence and ability to use pesticides safely and properly.

In the discussion of optional approaches in the preamble to the proposed regulations, the Agency was following its policy of providing States with as much flexibility as possible in implementing Section 4 of the amended FIFRA. The Agency regrets industry's expressed concern that the preamble discussions were mistaken by State officials and others as constituting requirements. However, EPA felt an obligation to surface the various optional approaches in the preamble in order to invite a wide range of comments and reactions to assist in making a final decision.

The program of certification under FIFRA is designed to provide a continuing mechanism whereby the country can now and in the future avail itself of a broad spectrum of pesticides. The assumption must be that new types of pesticides, new methods of application, and new precautionary procedures will evolve. It is essential for the maintenance of program quality, in terms of effective use and safety to man and his environment, that applicators continue to keep abreast of their profession and of changing technology. Because of the numerous categories of pesticide applicators, flexibility, both in terms of approach and content of training programs, is needed in planning and implementing this provision of the plan.

The Agency reiterates the previous preamble statement that continuing training programs may well be preferable to reexamination. Properly conducted training programs concurred with and periodically reviewed by the State lead agency may be an effective method of assuring that applicators continue to meet these requirements. There are a number of approaches that a State may encourage and no one approach is expected to suffice for all situations. Between now and October 1976, great emphasis will be placed on training programs. Although the extent and intensity of this training may not remain at this high level, in some cases it may evolve into well conceived programs of continuing education. Proper State coordination at this time will help assure that this occurs. There are a number of options open for meeting the needs of changing technology. These include commercial and other private training programs, ongoing programs of the State Cooperative Extension Service, required attendance at State sponsored conferences and workshops, and the accumulation by the applicator of continuing education units through participation in conferences, closed circuit educational TV programs, correspondence courses, and other identified training programs. It is anticipated that industry will take an active part in providing programs consistent with changing technology. This approach would distribute much of the cost of such training activities to private industry rather than placing the burden upon State governments. In addition, trade associations and certain commercial organizations now offer training programs which could be utilized by commercial applicators who do not have in-house training programs. All such private sector training programs would need to be approved by the State and would be subject to State monitoring.

Government Agency Plan (GAP). The Federal Working Group on Pest Management (FWGPM), as well as some individual Federal agencies, objected to parts of the preamble discussion on § 171.9 which refers to Federal applicators qualified under the Government Agency Plan (GAP). While stressing that the objection is not to the regulations themselves nor to the idea of Federal employees presenting their documentation to State authorities, FWGPM indicated specific objection to the preamble statement that "the Federal form issued to these employees will provide an opportunity for States that have requirements in addition to the GAP to specify other qualifications needed to apply restricted use pesticides in that State. The form would also permit the appropriate State official to indicate acceptance of the applicator's qualifications, thus authorizing the applicator to use restricted use pesticides within the State • • •." Some members of the FWGPM believe that this is an administrative procedure with which Federal agencies are not obliged to comply, according to Executive Order 11752.

This and many other comments concerning the GAP assume that the GAP is a mechanism for certification of applicators. This is *not* the case. Instead, Federal agency employees who satisfy GAP requirements have demonstrated their competence, and are *eligible* for certification. They are not, however, certified, and hence are not authorized to use or supervise the use of restricted use pesticides until a State with an approved State plan accepts them, either on the basis of the GAP acceptance alone, or GAP acceptance plus other State-imposed requirements. Thus, in requiring compliance with its State plan, the State, as the entity authorized to certify applicators pursuant to Section 4 of the amended FIFRA, is implementing the Federal law. For these and other reasons, EPA has concluded that State acceptance of the Federal form (when GAP acceptance alone does not meet all State requirements) constitutes a "substantive" rather than an "administrative" requirement. Further, Executive Order 11752 is concerned with situations at Federal facilities. GAP has been designed to relate in large part to the Federal employee, who in the course of his work, is involved in pesticides use on State and private property.

Some pest control companies and an industry association objected to any special provision for Federal employees, i.e., the GAP. The major concern expressed was that some Federal facilities may use the GAP as an instrument for excluding private industry certified applicators from contracting for pest control service on Federal installations. Although EPA would not attempt to tell another Federal agency that it cannot impose its own higher standards upon any applicators operating on Federal facilities, the Agency wants to make it clear that the GAP was not designed to encourage the build-up of a large cadre of Federal employee certified applicators or to inhibit or prevent private industry applicators from servicing Federal facilities. The GAP was established to accommodate the special needs of certain Fed-

eral employees, primarily those Federal employees who many be called upon to move frequently or on short notice to distant localities to conduct special pest control programs mandated by Congress, or in some cases those Federal employees who apply restricted use pesticides only at Federal facilities. As indicated in the preamble, there is no requirement (and no real or implied pressure from EPA) that Federal agencies utilize the GAP. The appropriateness of GAP for any given situation should be the determining factor.

EPA will continue to work with Federal agencies to resolve remaining differences. This effort, however, should not influence the preparation of State plans and should not, therefore, delay the promulgation of these regulations.

Mandatory Accident Reporting. The preamble to the proposed regulations specifically invited comments on the desirability of including mandatory accident reporting by commercial applicators as an element of an approvable State plan. A number of comments were received in response to this invitation, the majority of which opposed mandatory accident reporting.

As developed in the discussion in the preamble to the proposed regulations, it is important that actual use data about a pesticide be gathered in order to assist the Agency in carrying out its regulatory responsibilities under the amended FIFRA. Such information is useful in a variety of ways. For example, data indicating that a pesticide has or may have adverse effects in actual use alerts the Agency to investigate thoroughly the efficacy and environmental behavior of the product. On the other hand, if information gathered through laboratory research indicated that a pesticide should be suspended or cancelled, reliable data reflecting that the pesticide had not caused problems in use might persuade the Agency that suspension or cancellation was unnecessary.

However, a number of States have commented that it would be extremely difficult for them to implement an adequate reporting requirement (including the enactment of necessary legislation) between now and October 21, 1978, because most of their resources must be devoted to the establishment of an adequate certification program during this period. EPA accepts this view, and has decided not to include provisions for a mandatory accident reporting system as a State plan requirement at this time. However, the Agency intends to continue to consider various alternative mechanisms for the gathering of pesticide use data. Part of this inquiry will involve an evaluation of the adequacy of the Agency's voluntary Pesticide Episode Reporting System (PESTS). PESTS was revised in recent weeks and the Agency is currently making the active support of other Federal Agencies, State organizations, and the private sector in order to make it work effectively. In addition, there is a possibility that a few States may institute mandatory accident reporting programs on their own initiative. Such programs could provide useful information concerning the practical problems and pitfalls in administering a mandatory accident reporting system. This inquiry will be completed by November 1978. If it is determined at that time that voluntary accident reporting is not providing the information needed, it may be necessary to reconsider the need for mandatory pesticide episode reporting by commercial applicators.

2. SECTION-BY-SECTION COMMENTS[1]

Section 171.7(a). A State agency suggested that one word ("State") in this provision be changed to ("governmental") to allow for the inclusion of other cooperating agencies. This revision has been made to provide for the naming and describing of other agencies involved in certification programs.

This change is made only to accommodate a State needing the assistance of local authorities in implementing and maintaining its certification programs, and provided that such assistance is uniform throughout the State and is totally responsive to State direction. It is not the intention of the Act or these regulations to authorize political subdivisions below the State level to further regulate pesticides.

Section 171.7(b)(1). Several commenters wanted clarification of the provision calling for an opinion by the State Attorney General or Legal Counsel of the designated State Agency that the State has the legal authorities necessary to carry out the Plan. What is desired is a legal opinion reflecting that a State has the legal authorities to carry out the provisions of these regulations, supported by a sufficiently detailed analysis to enable the Agency to understand the reasoning behind the opinion.

Section 171.7(b)(1)(ii). Comments generally endorsed the concept of contingency approval to accommodate the practical problem that some State legislatures, because of the timing of legislative sessions, may not be able to enact the necessary legislation prior to October 21, 1978. However, some commenters were critical of the Agency's attempt in the proposal to set down rigid conditions concerning the terms applied to contingency approval, including the availability of a hearing under section 4(b) of the amended FIFRA in the event that the requested legislative authorities were not enacted. Other commenters objected to the statement in the preamble which said that contingency approval would lapse if a "special" legislative session were held, and the proposed legislation upon which contingency approval had been granted was not enacted. In support of this objection, it was pointed out that the agenda of special sessions frequently is inflexible, and that it may not be possible to consider pesticide legislation at such a special session. These comments generally point out the difficulty and undesirability of attempting to prescribe the terms and conditions of contingency approval before an actual application for contingency approval is presented. Obviously, there is a wide range of possible circumstances wherein contingency approval would be appropriate, and the terms and conditions which are appropriate to one case may not be appropriate in another. The Agency has, therefore, redrafted this section to allow maximum flexibility in dealing with contingency approval applications. Such applications will be dealt with on a case-by-case basis, and if approval is granted, terms and conditions appropriate to that particular case will be detailed. One of the factors to be considered in acting upon applications for contingency approval shall be the applicability of section 4(b) of the Act in the event that any terms or conditions of approval are not met during the period of contingency approval.

Section 171.7(b)(1)(iii)(A). Several State regulatory officials commented that this section should be changed to require only authority to deny and revoke certifications, and to leave the authority to suspend and to impose criminal or civil penalties optional. After careful consideration, EPA decided not to adopt this suggestion. In the opinion of the Agency, the effective administration of a certification program requires a reasonable range of enforcement options to allow the responsible State agency flexibility to respond appropriately to the wide range of situations which may arise. Lacking authority to suspend certification and to initiate criminal or civil penalty actions, States would be left without an appropriate response in many enforcement situations. The quality of such programs would consequently suffer.

Several changes have been made in the language of this section to eliminate ambiguity. In the proposed regulations, it was unclear whether misuse of a pesticide and falsification of required records should be grounds both for denial, suspension, and revocation of certification, and for the imposition of criminal or civil penalties. This section has been revised to reflect clearly that the State should have authority to take any of the above enforcement actions for misuse or falsification of required records. This section has been further modified to eliminate the reference to other unspecified enforcement mechanisms. The Agency has determined that this provision was unsuitable in a section designed to specifically outline the enforcement procedures which should be included in a State plan. Any additional enforcement procedures which are available to the State should, of course, be described under § 171.7(f), as other regulatory mechanisms contributing to the administration of the State plan.

Section 171.7(b)(1)(iii)(B). Several State lead agency officials objected to this provision on the basis that it required a State to automatically initiate revocation or suspension action after the conclusion of a Federal enforcement proceeding. This was not the intent of this provision. All that is required is that the

[1] Section numbers beginning each new paragraph refer to the subject-section numbers in the proposed rules unless prefaced with the term "new".

State have authority to suspend or revoke certification in the event that a certified applicator is convicted or is subject to a final order imposing a civil penalty pursuant to section 14 of the amended FIFRA. The decision whether to initiate suspension or revocation procedures will in all cases remain a matter of the State's discretion. In the view of the Agency, this subsection is necessary to ensure effective coordination between Federal and State enforcement of the amended Act.

Section 171.7(b)(1)(iii)(C). The Agency viewed with merit the objections raised on the inclusion of the word "surveillance." The term has been deleted: it has essentially the same intended meaning as "observation" and, therefore, was redundant. Additionally, EPA has inserted the term "sampling" in order to more adequately reflect the purpose and intent of a right-of-entry provision. Sampling authority is a requisite for assuring compliance with the law, in that effective enforcement often hinges on the ability of State officials to sample pesticides before, during, and/or after application.

Section 171.7(b)(1)(iii)(E). Several commenters offered different viewpoints on the provision requiring certified commercial applicators to keep and maintain records for two years. One industry spokesman objected to the provision, describing it as a "monumental economic burden." Another industry commenter questioned the Agency's authority to require record keeping by commercial applicators. On the other hand, certain environmental groups requested that commercial applicators be required to maintain records for three years since this longer holding period would ensure that the records would be available in any resulting litigation. The Agency recognizes that record keeping places some burdens on commercial applicators. However, such burdens are justified by the great need for records on the use of restricted use pesticides in order to manage an effective and meaningful regulatory program. As for the Agency's authority to require record keeping by certified commercial applicators, it is clear that Congress authorized the imposition of such a requirement, although it expressly prohibited the Agency from requiring record keeping by certified private applicators. It is the Agency's feeling that the two year requirement for record keeping is a reasonable provision but that the additional year would be unnecessary. In cases involving litigation, records can be protected for a longer period, if necessary, by court orders or other methods. Thus, the two-year requirement is retained in the final regulations.

A few State officials, in commenting further on this provision, requested the addition of alternate procedures for State officials to obtain access to required records. The proposal required that the records be available to State officials at reasonable times, at the commercial applicator's establishment where they are maintained. The commenters suggested that a procedure be included in the regulation requiring the submission of the records to the State agency upon request. The Agency has concluded that the interests of FIFRA, as amended, are served if the records are accessible to the State by some procedure, and that the precise procedure to be used can be left to the State's discretion. The language of the section has been redrafted to achieve this objective.

Section 171.7(b)(2). Several State officials questioned the need for this section which requires the State to supply information concerning the staffing of its program. Pursuant to section 4(a)(2)(B) of the amended FIFRA, the Administrator must determine that the State has given satisfactory assurances that the State agency has qualified personnel necessary to carry out the plan. Section 171.7(b)(2) is designed to provide the information necessary to allow the Administrator to make the determination required of him in the Act. In addition, such information will give both EPA and the State Agency a better grasp on what funds are necessary to carry out the plan.

Section 171.7(c). Several State officials expressed concern over the requirement that they give assurances that the State would devote adequate funds to administer the plan. This requirement comes directly from section 4(a)(2)(C) of the amended FIFRA. As stated in the Preamble to the proposed regulations, in the interest of reducing the volume of required data from the State, budgetary detail will not be required. However, the State should provide sufficient information concerning the proposed funding for its program from both State and Federal sources to give the Administrator a basis upon which to make the finding that the statute requires him to make in this area.

Section 171.7(d). Several State officials expressed concern that this section would be utilized to burden States with numerous requests for non-essential information. Specifically, there was criticism of the requirement that reports shall be submitted "from time to time to meet specific needs", because this wording allowed EPA too much discretion in requesting information. The Agency is well aware that excessive and unnecessary reporting requirements are burdensome and could impede the development of an effective certification program. However, as most State officials agree, the reporting requirements included in these regulations are minimal and reasonable. In addition, the broad language "from time to time" to which objections were made, was taken verbatim from section 4(a)(2)(D) of the amended FIFRA. EPA assures the State that its authority under this provision of the Act will be employed judiciously, and that requests for information will be made with sufficient lead time so as not to interfere unduly with the States' other responsibilities.

Section 171.7(d)(1). Comments from several State officials expressed concern about the purpose of including provisions requiring reports on enforcement aspects of a State plan. The Agency's position is that such information is valuable in evaluating the effectiveness of a State certification program, and could assist in isolating problem areas. Moreover, in order for these purposes to be served, it is necessary to have information concerning a broad range of enforcement activities, such as investigations, monitoring, information concerning administrative and judicial proceedings, and other activities supporting the effective administration of a certification program. The proposed § 171.7(d)(1)(iii) required reports only on enforcement "actions," which would not encompass all relevant information. Accordingly, this section has been revised. In order to broaden the scope of reportable information, §§ 171.7(d)(1)(iii) and 171.7(d)(1)(v) have been revised to place emphasis on the use of restricted use pesticides, rather than on certified applicator conduct.

Section 171.7(e)(2). This section brought objections from several commenters. State officials objected to the idea of indicating how they would certify applicators for special competency standards not now in existence. In addition, they indicated that § 171.7(e)(1) was the logical place to indicate any special State competency standards. The Agency accepts these views, and has omitted this section from the final regulations. If EPA establishes any special standards pursuant to the reserve § 171.4(d), or revises State plan requirements in any other respect, States will be given adequate time to make appropriate amendments to their State plans.

Section 171.7(e)(4)(ii). The lead paragraph in this subsection has been changed to reflect the fact that some private applicators may have been certified by procedures "equivalent" to examination that are determined to be acceptable by the Administrator. (New § 171.7(e)(3)(ii)).

Section 171.7(e)(5). State lead agency officials questioned how they would be able to indicate whether or not they accept Federal employees qualified under GAP as fully meeting their certification requirements or to describe any additional requirements they may impose on GAP qualified employees until they have had an opportunity to study the final, approved GAP. This issue, of course, basically involves timing. States which move ahead quickly with the development of their plans and submit them prior to approval of the GAP would rightfully hesitate to indicate their acceptance of a program still in the developmental stage. A subparagraph has been added to clarify this situation. (New § 171.7(e)(4)).

Section 171.7(e)(6). This section was changed by deleting "arrangements a State has made" and substituting "cooperative agreements a State has made with any Indian Governing Body." These modifications were made so this section would conform with changes which have been made in § 171.10, and which are fully discussed in that portion of the preamble. (New § 171.7(e)(5)).

Section 171.7(c)(7). A number of States commended the Agency for providing a place for States to indicate any arrangements they have with other States. On the other hand, several State agencies misinterpreted this provision and criticized the Agency for "requiring" the development of State programs for reciprocity. The Agency reiterates the position it took in the proposed regulations that such provisions are not required but that where there is sufficient similarity (among State programs) to warrant it, States are encouraged to develop programs for reciprocity. Development, now or in the future, of such programs, will ease the certification burden on interstate farming operations and commercial businesses involving pesticide applications across State lines. To further the goal of reciprocity, and in response to comments received from Indian groups, this section (New § 171.7(c)(8)) has been revised to permit reciprocal arrangements between a State and an Indian reservation submitting a plan for certification of applicators pursuant to § 171.10.

Section 171.7(c)(7)(ii). The word "examined" was deleted, and the phrase "determined to be competent" was substituted to reflect the fact that some private applicators may have been certified by procedures "equivalent" to examination. (New § 171.7(c)(8)(ii)).

Section 171.10. A State with a large number of Indian reservations objected to the wording of this section and the preamble discussion on the basis that it implies that an Indian Governing Body can make a unilateral decision as to whether or not it will utilize a particular State's certification program or develop its own plan and program. It was pointed out that the State involved should have a voice in the matters since it would have to expend funds for the certification program and would also need the proper authority for enforcement purposes. This section has been revised to indicate that the concurrence of the State (by way of a cooperative agreement) would be needed in the event that the Indian Governing Body of an Indian Reservation not subject to State jurisdiction desires to utilize a State's certification program to certify Indian applicators. EPA emphasizes that the development of State plans should not be delayed because the cooperative agreements have not been completed. The latter can be submitted as amendments to the State plan at a later date.

Section 171.10(b) has been modified to substitute the language "where the State has assumed jurisdiction under other Federal laws," for the language "subject to the jurisdiction of a State." This change brings this regulation into conformity with the treatment of this subject in regulations issued by EPA in other substantive areas (see 40 CFR 52.21 (a)(2)(v)).

Some State officials also objected to § 171.10(d) (New § 171.10(c)), which states that non-Indian employees contracted to apply restricted use pesticides on Indian Reservations not subject to State jurisdiction shall be certified either under a State certification plan accepted by the Indian Governing Body or under the Indian Reservation certification plan. These officials felt that non-Indian applicators not living on such a Reservation should be required to have State certification. While some aspects of the legal relationships between States and Indian Reservations remain to be resolved, it is the Agency's position that in those instances where a State has not assumed jurisdiction over a reservation under other Federal laws, that the Indian Governing Body should have the opportunity to choose a certification plan covering all applicators on the reservation. This procedure should provide adequate coverage of all restricted use pesticide applicators on such Indian Reservations pending final resolution of any outstanding legal questions. To further clarify the Agency's intent, § 171.10(d) (New § 171.10(c)) has been modified to cover all non-Indians applying pesticides on Indian Reservations not subject to State jurisdiction, and appropriate changes have been made in other subsections of § 171.10. In addition, § 171.10(c) in the proposal has been deleted from the final regulations. This section provided that Indians applying restricted use pesticides outside a reservation must be certified under the appropriate State certification plan. In the Agency's view, this section was unnecessary, as certifications issued pursuant to Indian plans necessarily are valid only within the limits of the territorial jurisdiction of the Indian Governing Body, just as in the case with certifications issued by States. EPA will, of course, encourage reciprocity between all certifying entities to reduce the administrative burden and to facilitate interstate commerce. Finally, the Agency observes that most, if not all, non-Indian applicators contracted to apply restricted use pesticides on Indian Reservations will also be conducting such applications outside the reservation. In those instances, State certification plan requirements would have to be met, providing the States with adequate procedures with which to regulate these applicators.

Effective Date

Pursuant to section 4(d) of the Administrative Procedure Act, 5 U.S.C. 553(d) the effective date of a regulation must be at least 30 days after its publication, unless the Agency finds "good cause" for specifying an earlier date. The Agency finds that in this case there is good cause for providing that these regulations are effective immediately upon publication. Any delay in the effectiveness of the regulations may severely prejudice the efforts of some states with legislative sessions currently in progress to pass legislation necessary to implement programs for applicator certification. In addition, it is apparent that no prejudice will result to anyone if these regulations are effective immediately, as they do not either directly or indirectly impose any duties or obligations on anyone. Finally, the Agency notes that the final regulations do not differ substantially or materially from the proposed regulations, which were published more than thirty days previous to the publication of the final regulations.

Accordingly, effective on March 12, 1975, Part 171 is amended by adding §§ 171.7 through 171.10.

Dated: March 3, 1975.

RUSSELL E. TRAIN,
Administrator.

40 CFR Part 171 is amended by adding §§ 171.7 through 171.10 to read as follows:

Sec.
171.7 Submission and approval of State plans for certification of commercial and private applicators of restricted use pesticides.
171.8 Maintenance of State plans.
171.9 Submission and approval of Government Agency Plan.
171.10 Certification of Applicators on Indian Reservations.

AUTHORITY: Secs. 4, 25(a), Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 86 Stat. 978.

§ 171.7 Submission and approval of State plans for certification of commercial and private applicators of restricted use pesticides.

If any State, at any time, desires to certify applicators of restricted use pesticides, the Governor of that State shall submit a State plan for that purpose. The Administrator shall approve the plan submitted by any State, or any modification thereof, if such plan in his judgment—

(a) Designates a State agency as the agency responsible for administering the plan throughout the State. Since several other agencies or organizations may also be involved in administering portions of the State plan, all of these shall be identified in the State plan, particularly any other agencies or organizations responsible for certifying applicators and suspending or revoking certification. In the extent that more than one governmental agency will be responsible for performing certain functions under the State plans, the plans shall identify which functions are to be performed by which agency and indicate how the program will be coordinated by the lead agency to ensure consistency of programs within the State. The lead agency will serve as the central contact point for the Environmental Protection Agency in carrying out the certification program. The numbers and job titles of the responsible officials of the lead agency and cooperating units shall be included.

(b) Contains satisfactory assurances that such lead agency has or will have the legal authority and qualified personnel necessary to carry out the plan:

(1) Satisfactory assurances that the lead agency or other cooperating agencies have the legal authority necessary to carry out the plans should be in the form of an opinion of the Attorney General or the legal counsel of the lead agency. In addition:

(i) The lead agency should submit a copy of each appropriate State law and regulation.

(ii) In those States where any requisite legal authorities are pending enactment and/or promulgation, the Governor (or Chief Executive) may request that a State plan be approved contingent upon the enactment and/or promulgation of such authorities. Plans approved on a contingency basis will be subject to such reasonable terms and conditions, concerning the duration of the contingency approval and other matters, as the Administrator may impose. During the period of the contingency approval, the State will have an approved certification program and may proceed to certify applicators, who will then be permitted to use or supervise the use of pesticides classified for restricted use under FIFRA, as amended.

(iii) The State plan should indicate by citations to specific laws (whether enacted or pending enactment) and/or regulations (whether promulgated or pending promulgation) that the State has legal authorities as follows:

(A) Provisions for and listing of the acts which constitute grounds for denying, suspending, and revoking certification of applicators, and for assessing criminal and/or civil penalties. Such grounds should include, at a minimum, misuse of a pesticide and falsification of any records required to be maintained by the certified applicator.

(B) Provisions for reviewing an applicator's certification to determine whether suspension or revocation of the certification is appropriate in the event of criminal conviction under section 14 (b) of the amended FIFRA, a final order imposing civil penalty under section 14 (a) of the amended FIFRA, or conclusion of a State enforcement action.

(C) Provisions for right-of-entry by consent or warrant by appropriate State officials at reasonable times for sampling, inspection, and observation purposes.

(D) Prohibits making it unlawful for persons other than certified applicators or persons working under their direct supervision to use restricted use pesticides.

(E) Provisions requiring certified commercial applicators to keep and maintain for the period of at least two years routine operational records containing information on kinds, amounts, uses, dates, and places of application of restricted use pesticides; and for ensuring that such records will be available to appropriate State officials.

(2) Satisfactory assurances that the lead agency and any cooperating organizations have qualified personnel necessary to carry out the plan will be demonstrated by including the numbers, job titles and job functions of persons so employed.

(c) Gives satisfactory assurances that the State will devote adequate funds to the administration of the plan.

(d) Provides that the State agency will make reports to the Administrator in a manner and containing information that the Administrator may from time to time require, including:

(1) An annual report to be submitted by the lead agency, at a time to be specified by the State, to include the following information:

(i) Total number of applicators, private and commercial, by category, currently certified; and number of applicators, private and commercial, by category, certified during the last reporting period.

(ii) Any changes in commercial applicator subcategories.

(iii) A summary of enforcement activities related to use of restricted use pesticides during the last reporting period.

(iv) Any significant proposed changes in required standards of competency.

(v) Proposed changes in plans and procedures for enforcement activities related to use of restricted use pesticides for the next reporting period.

(vi) Any other proposed changes from the State plan that would significantly affect the State certification program.

(2) Other reports as may be required by the Administrator shall be submitted from time to time to meet specific needs.

(e) Contains satisfactory assurances that the State standards for the certification of applicators of pesticides conform to those standards prescribed by the Administer under §§ 171.1–171.6. Such assurances should consist of:

(1) A detailed description of the State's plan for certifying applicators and a discussion of any special situations, problems, and needs together with an explanation of how the State intends to handle them. The State plan should include the following elements as a minimum:

(i) For commercial applicators:

(A) A list and description of categories and subcategories to be used in the State, such categories to be consistent with those defined in § 171.3.

(B) An estimate of the number of commercial applicators by category expected to be certified by the State.

(C) The standards of competency elaborated by the State. These shall conform and be at least equal to those prescribed in § 171.4 for the various categories of applicators utilized by the State. The standards shall also cover each of the points listed in the general standards in § 171.4(b) and the points covered in the appropriate specific standards set forth in § 171.4(c).

(D) For each category and subcategory listed under § 171.7(e)(4)(i)(A), either submission of examinations or a description of the types and contents of examinations (e.g., multiple choice, true-false) and submission of sample examination questions; and a description of any performance testing used to determine competency of applicators.

(ii) For private applicators:

(A) An estimate of the number of private applicators expected to be certified by the State.

(B) The standards of competency elaborated by the State. These shall conform and be at least equal to those prescribed in § 171.5(a), including the five requirements listed in § 171.5(a)(1)–(5).

(C) Types and contents of examinations and/or submission of detailed description of methods other than examination used to determine competency of private applicators.

(D) A description of any special procedure of testing that a State develops to determine the competency of a private applicator who is unable to read the label as prescribed in § 171.5(b)(1).

(2) A provision for issuance by the State of appropriate credentials or documents verifying certification of applicators.

(3) If appropriate, a description of any existing State licensing, certification or authorization programs for private applicators or for one or more categories of commercial applicators may be included. If these programs are determined by EPA to meet standards of competency prescribed by §§ 171.1 through 171.6, States may certify applicators so licensed, certified or authorized without any additional demonstration of competency provided:

(i) The commercial applicators who were licensed, certified, or authorized have demonstrated their competency based on written examinations and, as appropriate, performance testing, conforming to the standards set forth in § 171.4, and

(ii) The private applicators who were licensed, certified, or authorized have demonstrated their competency by written or oral testing procedures or other acceptable equivalent system, conforming to the standards set forth in § 171.5.

(4) A statement that the State accepts Federal employees qualified under the Government Agency Plan (GAP) as fully meeting the requirements for certification by that State; or a description of any additional requirements these employees must meet to apply restricted use pesticides in that State. Any such additional requirements shall be consistent with and shall not exceed standards established for other comparable applicators in that State.

(i) Until such time as the GAP has been fully developed and approved by EPA, this statement (§ 171.7(e)(4)) is not required. However, within 60 days after final approval of the GAP, the State should forward such a statement for inclusion in its State plan.

(5) A description of any cooperative agreements a State has made with any Indian Governing Body to certify or assist in the certification of applicators not subject to State jurisdiction. (§ 171.10).

(6) A description of any arrangements that a State has made or plans to make relating to reciprocity with other States or jurisdictions for the acceptance of certified applicators from those States or jurisdictions. However, those arrangements should meet these conditions:

(i) The State according reciprocity should provide for issuance of an appropriate document verifying certification based upon the certifying document issued by the other States or jurisdictions.

(ii) The State according reciprocity should have enforcement procedures that

cover out-of-State applicators determined to be competent and certified within the State or jurisdiction.

(iii) The detailed State or jurisdiction standards of competency, for each category identified in the reciprocity arrangement should be sufficiently comparable to justify waiving an additional determination of competency by the State granting reciprocity.

(f) In responding to the preceding requirements, a State may describe in its State plan other regulatory activities implemented under State laws or regulations which will contribute to the desired control of the use of restricted use pesticides by certified applicators. Such other regulatory activities, if described, will be considered by the Administrator in evaluating whether or not a State's certified applicator program satisfies the requirements of § 171.7 (a) through (e).

§ 171.8 Maintenance of State plans.

(a) Any State certification program approved under § 171.7 shall be maintained in accordance with the State plan approved under that section. Accordingly, the State plan should include:

(1) Provisions to assure that certified applicators comply with standards for the use of restricted use pesticides and carry out their responsibility to provide adequate supervision of noncertified applicators.

(2) Provisions to ensure that certified applicators continue to meet the requirements of changing technology and to assure a continuing level of competency and ability to use pesticides safely and properly.

(b) An approved State plan and the certification program carried out under such plan may not be substantially modified without the prior approval of the Administrator. A proposed change may be submitted for approval at any time but all applicable requirements prescribed by these Regulations must be satisfied for the modification to be eligible for approval by the Administrator.

(c) Whenever the Administrator determines that a State is not administering the certification program in accordance with the State plan approved under § 171.7, he shall so notify the State and provide for a hearing at the request of the State and, if appropriate corrective action is not taken within a reasonable time, not to exceed ninety days, the Administrator shall withdraw approval of the plan.

§ 171.9 Submission and approval of government agency plan.

This section is included to provide for certain Federal employees including those whose duties may require them to use or supervise the use of restricted use pesticides in a number of States.

(a) Sections 171.1 through 171.8 will, with the necessary changes, apply to the Government Agency Plan (GAP) for determining and attesting to the competency of Federal employees to use or supervise the use of restricted use pesticides.

(b) Federal employees qualified under the GAP shall:

(1) Be prepared to present the Federal form issued to them attesting to their competency to appropriate State officials.

(2) Fulfill any additional requirements States may have enumerated in their State plans as provided for under § 171.7 (c) (4).

(c) The employing Federal agency shall ensure that certified employees using or supervising the use of restricted use pesticides within a Federal facility are subject to the same or equivalent provisions prescribed under § 171.7(b) (1) (iii) (A)–(E).

§ 171.10 Certification of Applicators on Indian Reservations.

This section applies to applicators on Indian Reservations.

(a) On Indian Reservations[1] not subject to State jurisdiction the appropriate Indian Governing Body[2] may choose to utilize the State certification program, with the concurrence of the State, or develop its own plan for certifying private and commercial applicators to use or supervise the use of restricted use pesticides.

(1) If the Indian Governing Body decides to utilize the State certification program, it should enter into a cooperative agreement with the State. This agreement should include matters concerning funding and proper authority for enforcement purposes. Such agreement and any amendments thereto shall be incorporated in the State plan, and forwarded to the Administrator for approval or disapproval.

(2) If the Indian Governing Body decides to develop its own certification plan, it shall be based on either Federal standards (§§ 171.1 through 171.8) or State standards for certification which have been accepted by EPA. Such a plan shall be submitted through the United States Department of the Interior to the EPA Administrator for approval.

(b) On Indian Reservations where the State has assumed jurisdiction under other Federal laws, anyone using or supervising the use of restricted use pesticides shall be certified under the appropriate State certification plan.

(c) Non-Indians applying restricted use pesticides on Indian Reservations not subject to State jurisdiction shall be certified either under a State certification plan accepted by the Indian Governing Body or under the Indian Reservation certification plan.

(d) Nothing in this section is intended either to confer or deny jurisdiction to the States over Indian Reservations not already conferred or denied under other laws or treaties.

[FR Doc.75-6105 Filed 3-11-75;8:45 am]

[1] The term "Indian Reservation" means any federally-recognized reservation established by Treaty, Agreement, Executive Order, or Act of Congress.

[2] The term "Indian Governing Body" means the governing body of any tribe, band, or group of Indians subject to the jurisdiction of the United States and recognized by the United States as possessing power of self-government.

FOR USE IN COLUMNS AND RADIO

_____COUNTY AGENT FOR _____

COUNTY SAYS PLANS FOR A STATEWIDE PESTICIDE APPLICATOR CERTIFICATION PROGRAM TO BE CONDUCTED IN 1976 ARE COMPLETED. THIS PROGRAM IS IN RESPONSE TO THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT AS AMENDED BY CONGRESS IN 1972 WHICH REQUIRES ALL APPLICATORS WHO USE PESTICIDES DESIGNATED FOR RESTRICTED USE TO BE CERTIFIED. RESTRICTED USE PESTICIDES ARE THOSE THAT REQUIRE CONTROLS IN ADDITION TO LABEL INSTRUCTIONS. THEY MAY CAUSE ADVERSE EFFECTS ON THE ENVIRONMENT OR THE APPLICATOR UNLESS APPLIED BY COMPETENT PERSONS WHO HAVE SHOWN THE ABILITY TO USE THEM SAFELY AND EFFECTIVELY.

GENERAL USE PESTICIDES CAN BE PURCHASED AND USED BY ANYONE. THERE SHOULD BE AN ADEQUATE SUPPLY OF THESE MATERIALS AVAILABLE FOR HOMEOWNERS TO USE WITHOUT BEING CERTIFIED.

THE COUNTY EXTENSION OFFICE WILL BE IN CHARGE OF TRAINING IN THIS AREA. AFTER TRAINING, PRIVATE APPLICATORS WILL BE CERTIFIED BY THE DIVISION OF PLANT INDUSTRY OF THE MISSISSIPPI DEPARTMENT OF AGRICULTURE.

_____ COUNTY AGENT FOR _____

COUNTY SAYS IF YOU ARE ENGAGED IN THE PRODUCTION OF AN AGRICULTURAL COMMODITY AND INTEND TO USE OR SUPERVISE THE USE OF RESTRICTED PESTICIDES, YOU MUST BE CERTIFIED AS A PRIVATE PESTICIDE APPLICATOR. THIS CERTIFICATION IS REQUIRED BY THE AMENDED FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT. TO BECOME CERTIFIED, YOU MUST SHOW THAT YOU CAN RECOGNIZE COMMON PESTS AND PEST DAMAGE, APPLY PESTICIDES IN ACCORDANCE WITH LABEL INSTRUCTIONS AND HAVE A KNOWLEDGE OF OTHER GOOD PESTICIDE PRACTICES.

THE COUNTY EXTENSION OFFICE WILL CONDUCT TRAINING SESSIONS TO HELP PRIVATE APPLICATORS BECOME CERTIFIED. PACKETS OF TRAINING MATERIALS AND OTHER STUDY AIDS FOR TRAINING SESSIONS MAY BE PICKED UP AT THE COUNTY AGENT'S OFFICE, LOCATED _____. ALL INSTRUCTIONAL MATERIALS, TRAINING MEETINGS, FACILITIES, AND CERTIFICATES WILL BE FREE. YOUR COUNTY AGENT WILL BE RESPONSIBLE FOR TRAINING APPLICATORS. THE DIVISION OF PLANT INDUSTRY OF THE MISSISSIPPI DEPARTMENT OF AGRICULTURE, WILL BE IN CHARGE OF CERTIFICATION.

PESTICIDES ARE USEFUL, BUT DANGEROUS TOOLS. _____

COUNTY AGENT FOR _____ COUNTY SAYS THIS IS THE REASON THE AMENDED FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT REQUIRES INDIVIDUALS WHO WILL BE USING CERTAIN PESTICIDES TO BE TRAINED IN SAFE APPLICATION PROCEDURES AND OTHER PESTICIDE SAFETY RULES. PRIVATE APPLICATORS SUCH AS FARMERS, RANCHERS, ORCHARDISTS, OR ANYONE ELSE WHO USES OR SUPERVISES THE USE OF RESTRICTED PESTICIDES IN THE PRODUCTION OF AN AGRICULTURAL COMMODITY MUST BE CERTIFIED. THIS ACT DOES NOT APPLY TO GENERAL USE PESTICIDES, SUCH AS THOSE USED IN HOME GARDENS AND LAWNS.

YOUR COUNTY EXTENSION AGENT WILL CONDUCT TRAINING SESSIONS TO HELP INDIVIDUALS PREPARE FOR CERTIFICATION. THE DIVISION OF PLANT INDUSTRY OF THE MISSISSIPPI DEPARTMENT OF AGRICULTURE WILL BE IN CHARGE OF CERTIFICATION.

FOR MORE INFORMATION ON THIS PROGRAM CONTACT THE COUNTY AGENT'S OFFICE.

_____COUNTY AGENT FOR _____

COUNTY SAYS DUE TO A CHANGE IN THE FEDERAL LAW, FARMERS OR ANYONE ELSE WHO USES OR SUPERVISES THE USE OF RESTRICTED PESTICIDES IN THE PRODUCTION OF AN AGRICULTURAL COMMODITY MUST BE CERTIFIED AS A PRIVATE PESTICIDE APPLICATOR. ANYONE WHO USES ONLY GENERAL USE PESTICIDES DOES NOT HAVE TO BE CERTIFIED.

TRAINING SESSIONS TO PREPARE PRIVATE PESTICIDE APPLICATORS FOR CERTIFICATION WILL BEGIN _____.
(DATE, TIME, PLACE)

YOU MUST PICK UP A PACKET OF TRAINING MATERIAL AND OTHER STUDY MATERIALS AT THE COUNTY AGENT's OFFICE BEFORE THE SESSIONS BEGIN. ALL INSTRUCTIONAL MATERIALS, TRAINING MEETINGS, FACILITIES, AND CERTIFICATES WILL BE FREE. COUNTY AGENTS ARE RESPONSIBLE FOR TRAINING PRIVATE APPLICATORS, BUT CERTIFICATION WILL BE DONE BY THE DIVISION OF PLANT INDUSTRY, OF THE MISSIPPI DEPARTMENT OF AGRICULTURE.

_____ COUNTY AGENT FOR _____

COUNTY SAYS A STATEWIDE PESTICIDE APPLICATOR CERTIFICATION PROGRAM WILL BE CONDUCTED IN 1976. THIS PROGRAM IS DESIGNED TO TRAIN AND CERTIFY PRIVATE AND COMMERCIAL PESTICIDE APPLICATORS IN THE SAFE USAGE OF RESTRICTED PESTICIDES. THIS TRAINING PROGRAM IS PART OF THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT, AS AMENDED BY CONGRESS IN 1972. ALL APPLICATORS WHO PLAN TO USE RESTRICTED USE PESTICIDES MUST BE CERTIFIED BY THIS PROGRAM IN ORDER TO BUY THESE MATERIALS. HOME GARDENERS AND OTHER USERS OF GENERAL USE PESTICIDES WILL NOT BE REQUIRED TO BE CERTIFIED UNDER THIS PROGRAM. GENERAL USE PESTICIDES WILL CONTINUE TO BE AVAILABLE FOR PURCHASE BY THE GENERAL PUBLIC.

Sample Circular Letter to be
sent to private applicators

If you are a farmer or anyone else producing an agricultural commodity and will be using or supervising the use of restricted pesticides, you must be certified as a private applicator. New laws require that you be certified.

To become certified, you must show that you can:

- recognize common pests and pest damage
- read and understand labels
- apply pesticides in accordance with label instructions and warnings
- recognize local environmental situations
- recognize poisoning symptoms and know what to do in case of an accident

Your county Extension office will have training sessions to help you become certified. You may pick up packets of training materials and other study aids at my office before the sessions begin. All instructional materials, training meetings, facilities, and certificates will be free. As county Extension agent I will be responsible for training you as a private applicator. The Division of Plant Industry, Mississippi Department of Agriculture, will certify you.

The first of several training sessions will be held _____.
(date, time, place)

Sincerely,

County Agent

News item for
County Agent's column

Training sessions to prepare private pesticide applicators for certification will begin _____.
(date, time, place)

If you are a farmer or anyone else who will be using or supervising the use of restricted pesticides, you must be certified as a private applicator.

You may pick up a packet of training material and other study materials at my office before the sessions begin. All instructional materials, training meetings, facilities, and certificates will be free. I will be responsible for training you as a private applicator. The Division of Plant Industry, Mississippi Department of Agriculture, will certify you.

A training meeting for ___(name)___ County farmers, orchardists, ranchers or other applicators of pesticides designated for restricted use will be held ___(date)___ at __(place)__, announced ___(county agent)___.

The training program is in compliance with the Federal Insecticide, Fungicide, and Rodenticide Act as amended by Congress in 1972. The Act requires that all applicators who use restricted-use pesticides be certified. This responsibility was designated to the states by Congress with the Environmental Protection Agency serving in the administration of the federal law.

To be in compliance with the federal laws and regulations, the Mississippi Legislature in 1975 passed a state law which insured that pesticide applicators would have an opportunity to buy and use restricted-use pesticides.

The comprehensive training program, designed by the Mississippi Cooperative Extension Service, will include instruction in (1) Laws and Regulations; (2) Label, Safety and Environment; (3) Pest and Pesticides; and (4) Application, Equipment and Technique.

"I urge all applicators in __(name)__ County who use restricted-use pesticides to attend the __(date)__ training session," said __(county agent)__. "In addition to insuring the applicator the opportunity to buy and use these restricted-use pesticides, the training will also insure that users have the competence to handle these pesticides without causing danger to themselves, the public or the environment." __(County Agent)__ also said, "The program will allow for continued use of certain products that might otherwise the withdrawn because of their potential danger."

SLIDE SET I

Slide No.	Video	Audio
1	Title Slide	Law and Regulations
2	Changed Old Laws	To provide safer and more efficient pest control, recent enactments have changed some old laws and added new laws pertaining to pesticides. These laws should insure continued widespread use of pesticides, but improved safety for the user and his family as well as more protection for the environment.
3	Old Laws	In 1947, Congress passed a law called the Federal Insecticide, Fungicide, and Rodenticide Act. This act set forth registration and labeling requirements of individual pesticide products marketed in interstate commerce.
4	New Laws	In 1970, the Environmental Protection Agency was given the responsibility of administering the law. Because it was inadequate, an ammended law was developed entitled Federal Environmental Pesticide Control Act (FEPCA). This ammended FIFRA in October 1972, and provided several major provisions.

SLIDE SET I

Slide No.	Video	Audio
5	Read the Law	These provisions are very comprehensive and are covered in 27 sections in the law. All pesticide users should read and have a thorough understanding of this law.
6	Federal Register	The details of the law are presented in the Federal Register. Other sources of literature include pamphlets, fact sheets, and newsletters published by the Mississippi Department of Agriculture, and the Environmental Protection Agency.
7	Law Requirements - 1.	Some of the provisions that may affect you most are: 1) All pesticide products shipped within a state or between states must be registered.
8	Law Requirements - 2.	2) The use of any registered pesticide in any way other than specified under labeling instructions is prohibited and is subject to civil and criminal penalties.

SLIDE SET I

Slide No.	Video	Audio
9	Law Requirements - 3.	3) All pesticide formulations must be classified for "general" or "restricted" use. Pesticide classification is based on the use site, toxicity, adverse affects on the environment and other factors.
10	Label Classification 1.	Pesticides classified for general use do not require the applicator to be certified. These pesticides may be purchased and used by anyone.
11	Restricted Use Pesticides	A restricted use pesticide is too hazardous to use without knowledge by the applicator of how to apply the pesticide properly.
12	License State of Mississippi Certificate	Certification is proof that you know the safe, and proper way to use restricted pesticides. Restricted use pesticides may be used only by or under the direct supervision of certified applicators or under other conditions required by EPA. Certification of applicators will be the responsibility of the Division of Plant Industry, Mississippi Department of Agriculture.

SLIDE SET I

Slide No.	Video	Audio
13	Private Applicator	A pesticide applicator can become certified as a private applicator
14	Man in cotton field	"A private applicator is a certified applicator who uses or supervises the use of any pesticide classified for restricted use for the purpose of producing any agricultural commodity on property owned or on the property of another person."
15	Practical Knowledge 1. - 5.	Private applicators must have practical knowledge which includes, but not limited to, recognizing certain pests and damage, reading and understanding labels and labeling, applying according to label instructions, recognizing environmental situations to avoid, and recognizing poisoning symptoms.
16	Commercial Applicator	A pesticide applicator can become certified as a commercial applicator.

SLIDE SET I

Slide No.	Video	Audio
17	Airplane in Field	A commercial applicator is a certified applicator who uses or supervises the use of any pesticide classified for restricted use for any purpose or on any property other than as provided by the definition of "private Applicator".
18	Comprehensive Knowledge 1. - 2.	An applicator seeking commercial certification will be required to demonstrate competency through a more comprehensive knowledge of principles and practices of pest control and safe use of pesticides. These areas of competency shall include a thorough knowledge of general and specific standards described in FEPCA.
19	Commercial Applicators General Standards 1. - 4.	General Standards include label and labeling comprehension and interpretation, safety, environmental effects, pests,
20	Commercial Applicators General Standards 5. - 8.	Pesticides, equipment, application techniques, laws and regulations.

SLIDE SET I

Slide No.	Video	Audio
21	Commercial Applicators Specific Standards	Specific standards apply to categories of certification. A commerical applicator can become certified in one or more categories.
22	Commercial Applicators Specific Standards 1. - 5.	Some of these categories include: 1) Agriculture 2) Forestry 3) Ornamental and Turf 4) Seed Treatment 5) Aquatic
23	Specific Standards 6. - 10.	6) Right-of-Way 7) Industrial, Institutional, Structural, and Health Related 8) Public Health 9) Regulatory 10) Demonstration & Research
24	Law Requirement - 4.	Another provision of the law states that Federal standards for certification of restricted pesticide applicators will be set forth by EPA. Each state must submit its certification programs for approval by EPA.

SLIDE SET I

Slide No.	Video	Audio
25	Law Requirement 5.	EPA can issue a "stop sale, use and removal" order and seize pesticides if the law is violated.
26	Can with red label	A pesticide found in violation is stamped to prevent further sale and use of the material.
27	Law Requirement - 6.	Federal Assistance to the states to enforce and administer provisions of the law is authorized in FEPCA.
28	Law Requirement - 7.	Establishments engaged in the production and marketing pesticides are subject to inspection by Federal officials.

SLIDE SET I

Slide No.	Video	Audio
29	Law Requirement - 8.	Several unlawful acts are defined in the law which affect both pesticide producers and users.
30	Unlawful to: anyone not certified	Some of the unlawful acts include: 1) Making a restricted pesticide available to anyone not certified.
31	Unlawful to: use a restricted pesticide	2) Using a restricted pesticide unless the applicator is certified, or the application is made by a competent person under the direct supervision of a certified applicator.
32	Unlawful to: Use a restricted pesticide inconsistent with its labeling	3) Using any registered pesticide in a manner inconsistent with its labeling.

SLIDE SET I

Slide No.	Video	Audio
33	Law Requirement - 9.	The Environmental Protection Agency has other authority over pesticides, such as, setting pesticide packaging and dispersal methods. State and Federal agencies may be authorized under special circumstances to use specific pesticides under emergency conditions.
34	Law Requirement - 10.	Penalties may be levied, for example, against a purchaser who misuses pesticides; of against a producer who sells misbranded or contaminated pesticides. Fines will be determined on the basis of civil or criminal conviction.
35	Private Applicator Violations	Farmers and other private applicators can be fined up to 1,000 dollars and/or 30 days in prison for violation of the law.
36	Commercial Applicator Violations	Any registrant, commercial applicator or distributor who violates the law is liable up to $25,000 fine and/or up to one year in prison.

SLIDE SET I

Slide No.	Video	Audio
37	State Pesticide Laws	Five state laws with regulations under each are in effect in Mississippi regulating pesticides and pesticide applicators.
38	State Pesticide Law 1.	The Mississippi Pest Control Law requires that all applicators of pesticides be licensed if they receive a fee for their services.
39	2. Agricultural Aviation Licensing Law	The Agricultural Aviation Licensing Law (AALL) regulates the application of pesticides, seed and other chemicals by aerial applicators. All applicators must be licensed and each aircraft registered. The only exception is when pesticides are applied by the owner of the aircraft on his property.
40	3. Application of Herbicides by aircraft	Another law requires that all applicators applying hormone-type herbicides by aircraft secure a license and use an approved aircraft. This license is in addition to the requirement specified in the Agricultural Aviation Licensing Law. Both private and commercial applicators are required to be licensed under this law.

SLIDE SET I

Slide No.	Video	Audio
41	4. Mississippi Pesticide Application Act	The Mississippi Pesticide Application Act of 1975, requires certification of private and commercial applicators who use restricted use pesticides and are not required to be licensed under other state licensing laws.
42	Man at desk	To become certified, an applicant must demonstrate competency by: 1) Passing written and/or oral examination, or other acceptable procedures.
43	Woman at file cabinet	Commercial applicators must keep records of their work and make reports if requested. Private applicators are not required to keep records.
44	Man with money in hand	If the provisions of the Act are violated, a penalty of not more than 500 dollars and/or six months in jail can be imposed.

SLIDE SET I

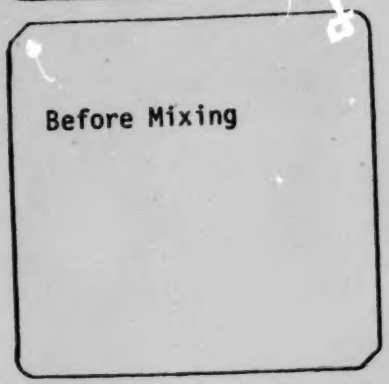
Slide No.	Video	Audio
45	5. Mississippi Pesticide Law	Another state law is the Mississippi Pesticide Law. This law enables Mississippi to meet the requirements of the Federal Environmental Pesticide Control Act of 1972. This law provides for pesticide registration and licensing of dealers selling restricted use pesticides.
46	Prepared by Mississippi Cooperative Extension Service	

SLIDE SET II

Tray 1

Slide No.	Video	Audio
1	Title Slide	Label Safety and Environment
2	Pesticide containers	The single most important source of information for a pesticide applicator is the label. All pesticide containers are required by law to have a label. The label contains approved procedures for mixing and applying the pesticide, along with guidelines for safety, storage, disposal and environmental protection.
3	Pesticide Tests	Before a label is placed on a pesticide it must pass many tests. These tests require years of research by scientists with emphasis on both laboratory and field studies. The information on the pesticide label takes at least five to seven years to get. The chemical company will spend an estimated five to six million dollars for each pesticide.
4	Man observing label	Chemical companies are interested in providing information on labels which not only give directions for control of pests, but safety factors as well. However, the information on some labels is very complicated, while others can be easily understood.

SLIDE SET II

Slide No.	Video	Audio
5		Therefore, be sure to take the time to read and understand the label before using a pesticide.
6		There are five times when you should read the pesticide label: 1. Before you buy the pesticide.
7		2. Before you mix the pesticide.
8		3. Before you apply the pesticide.

SLIDE SET II

Slide No.	Video	Audio
9	Before Storing	4. Before you store the pesticide.
10	Before Disposing	5. Before you dispose of the excess pesticide or container.
11	Pesticide Names	All pesticide labels are required to have certain basic features. Names are common to all pesticides. Most pesticides have three names. These are the brand name, common name, and chemical name.
12	Picture of Restricted Use Pesticide Label	The most commonly known is the Brand Name. It is sometimes known as the trade name or product name. The brand name is the manufacturer's or producer's name for the product shown on the label.

SLIDE SET II

Slide No.	Video	Audio
13	Establishment No.	The manufacturer's name will usually be listed above the brand name or at the bottom of the label and may be expressed in much smaller script. The manufacturer of this product is A-Z chemicals.
14	De Pesto	How can a pesticide user distinquish between the brand or trade name and other names on the label? The brand or trade name usually has a trade-mark symbol and the first letter or the entire name will be capitalized.
15	Same Pesticide Different Brand Names	The brand name or trade name can often be confusing. There may be more than one brand name for the same pesticide depending on the company that manufactures, produces, distributes, or formulates the pesticide
16	Common Name	Probably the most important name to the pest-icide user is the common name. This name is most often used in control recommendations The common name for the pesticide is the name that identifies the active ingredients of a product.

SLIDE SET II

Slide No.	Video	Audio
17	Varies with Company	While company brand names for the same product may vary between companies, common names for the same product are always the same.
18	DE PESTO	Common names are usually located below the brand on labels, and are written in lower case letters. Trademark symbols are associated with brand names, but are not used with common names.
19	Chemical Name	To a chemist the most important name is the chemical name. This is the name of the ingredient as well as the name from which the common name is derived.
20	Ingredients	The chemical name of De Pesto is 1,3 Trimethylethyl Normally the chemical name will be expressed as the active ingredient of a product. It is usually located below the brand and common names and will be expressed as a percentage.

SLIDE SET II

Slide No.	Video	Audio
21	Active Ingredients	The second feature of a label is the ingredient statement. There are two ingredient statements listed on a label, namely, active ingredient and inert ingredient.
22	Active ingredient	The active ingredient is that part of a product which controls pests.
23	Inert Ingredients	The inert ingredient, may or may not be named, but makes up the inactive portion of the contents. These ingredients are made up of solvents, emulsifiers, wetting agents and carriers.
24	This Product Contains 3.5 lbs. of Pestoff per gallon	The net contents indicates how much of the active ingredient, usually expressed in pounds, is contained in a gallon or other liquid measurement. The amount may be expressed with a number following the brand name or as a statement below the the brand name.

SLIDE SET II

Slide No.	Video	Audio
25	Restricted Uses	The label lists only those uses which have been registered. It is illegal to use the pesticide for any other purpose or in any other manner not described on the label.
26	Directions - How Much	The directions on a label provide information on the use of the product. These are very important directions, including how much of the pesticide to apply,
27	Directions - What Interval	The number of days between application
28	Directions - What Pest	What pest it will control,

SLIDE SET II

Slide No.	Video	Audio
29	What Volume	What volume of spray to apply per acre,
30	Where to Apply	Where to apply the application,
31	When to Apply	and When to make the Application,
32	When not to Apply	The directions also include information on restrictions. For example, some restrictio indicate the number of days that must exist between the last pesticide application and harvest.

SLIDE SET II

Slide No.	Video	Audio
33	Re - entry Interval	Many precautions are related to re-entry intervals established by the Environmental Protection Agency. Re-entry interval is the amount of time (hours) required before anyone can enter a treated field after the application of a pesticide.
34	Man with red hat in field	Provisions of re-entry standards include: 1) Prohibition against applying pesticides when unprotected workers are in the field.
35	Man in protective clothing in front of machinery	2) Definition of protective clothing - a hat or other suitable head covering, a long sleeved shirt, and long legged trousers or a coverall type garment, shoes, and socks.
36	48 Hour Re-entry Interval 1. - 8.	3) Unprotected workers cannot enter fields where pesticides have been applied until spray has dried or dust settled. These eight pesticides have 48 hour re-entry intervals.

SLIDE SET II

Slide No.	Video	Audio
37	24 Hour Re-entry Interval 9. - 12.	Four have 24 hour intervals.
38	Two men in field	4) The applicator has the option of giving appropriate and timely warnings to workers orally or by placing signs at the usual points of entrance of fields or both.
39	Mfg. by A-Z Chemicals	A label contains other types of information required by law. Included is the name and address of the manufacturer,
40	Establishment No.	and the registration and establishment number.

SLIDE SET II

Slide No.	Video	Audio
41	Danger Poision	Warnings and precautions help the applicator determine the hazards associated with the product. This is determined by observing the signal words, symbols, and environmental warnings.
42	Warning-Danger Caution	The signal word is one of the most important features of a label. One of three basic signal words are found on each label. These are: Danger, Warning, Caution.
43	1. Highly Toxic	The signal word required depends upon the potential hazard or toxicity of the active ingredient and the formulation.
44	Finger with Insecticide on it	It takes only taste of a pesticide which has danger/poison signal words to kill an average man if taken through the mouth. Every effort should be made to prevent accidental spills and from leaving these materials accessable to children.

SLIDE SET II

Slide No.	Video	Audio
45	II. Moderately Toxic	If the pesticide is moderately toxic it carries the signal word "warning" on the label.
46	Spoon with Pesticide in it	"Warning" means that the pesticide is moderately hazardous and if taken through mouth, about a teaspoonful to a tablespoonful can kill an average man.
47	III. Less Toxic	Pesticides which have the signal word "Caution" are comparatively free from danger or have low toxicity. Be sure to read the label before using these materials because special instructions for use may be included.
48	CAUTION	The word "Caution" implies that an average man can be killed if about an ounce is taken through the mouth. These pesticides are relatively safe, but all precautions should be followed.

SLIDE SET II

Slide No.	Video	Audio
49	Pesticide Spill	Always read and follow statements on the label that emphasize environmental warnings. For example, a statement might read, "Do not contaminate water or soil when cleaning equipment or when disposing of water."
50	Statement of Practical Treatment	Always familiarize yourself with first aid procedures for each pesticide used.
51	Classification Factors	One provision of the Federal Environmental Pesticide Control Act called for classification of pesticides. All products are placed in one of two classes based on its toxicity, the way it is used, and its effect on the environment.
52	Label Classification 1.	The first class of pesticides is "general use". A statement on the label indicates the classification which implies that very little or no harm will result to the user or environment if the pesticide is used exactly as directed. General use pesticides are available for use by the public without certification.

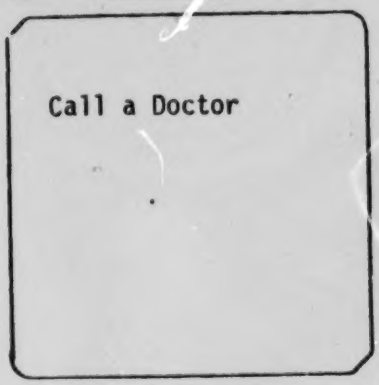
SLIDE SET II

Slide No.	Video	Audio
53	Restricted Use Pesticides	The second class of pesticides is "restricted use". If a label has a restricted use statement, it implies that the product could cause harm or damage to the user and/or the environment even when used as directed on the label.
54	Gavel/Money	If you are using a pesticide in a manner other than specified on the label, you are breaking the law and are subject to a fine.
55	Woods/Ambulance	There are two good reasons for using pesticides safely: 1) To keep yourself and other people from being poisoned, and 2) To keep the environment from being polluted.
56	Person receiving Oxygen	In protecting yourself and others, read the label and follow safety instructions. Children under 10 are the victims of at least half of the accidental pesticide deaths in this country and 75 per cent of all pesticide poisonings reported.

SLIDE SET II

Slide No.	Video	Audio
57	Swallowing	Pesticides may enter the body in three different ways. Most deaths are caused by eating or drinking the product. You can also swallow poison by licking your lips or eating without thorough washing.
58	Breathing	But some applicators die or lose time from work because of pesticide injury when they breath a pesticide, or
59	Through the Skin	by contact through the skin.
60	General Symptoms	Pesticide users should exercise every precaution to prevent an accident. However, if an individual is exposed to a pesticide, symptoms of poisoning may develop. Some of the early symptoms of pesticide poisoning include headache, nausea, chest pains, blurred vision, and giddiness.

SLIDE SET II

Slide No.	Video	Audio
61		If poisoning is severe, advanced signs will develop. These include sweating, vomiting, drooling, and pin point pupils.
62		Having some of the symptoms does not always mean that you have been poisoned, but the pattern of symptoms and symptoms becoming more severe are good indications of poisoning. It is urgent to get medical attention quickly if you suspect poisoning. Don't let yourself get dangerously sick before calling a doctor or going to the hospital.
63		If you think you are poisoned, take the following steps: 1) Wash poison off with water if possible. 2) Take pesticide container or label with you to doctor's office. 3) Describe the symptoms to the doctor.
64		To prevent accidental poisoning, always wear protective clothing when mixing and applying a pesticide. The type and amount of protective clothing will be described on the label.

SLIDE SET II

Slide No.	Video	Audio
65	Man in field with Protective Clothing	Law and moderately hazardous pesticides require the use of limited protective clothing: Items normally required area: 1) Clean clothing with long sleeves 2) Waterproof long sleeve gloves 3) Waterproof footwear (Use canvas or leather shoes) 4) Wide brimmed hat
66	Man in field with yellow clothing	In contrast, more protective clothing and equipment should be used when applying highly hazardous pesticides. Items should include: 1) Waterproof clothing (rubber or plastic coated jacket and pants)
67	Man with Hat	2) Waterproof wide-brimmed hat (lightweight rubber, plastic or plastic coated)
68	Boots Protective	3) Rubberized or waterproof boots

SLIDE SET II

Slide No.	Video	Audio
69	Protective Gloves	4) Waterproof long sleeve gloves
70	Mask and goggles	5) Safety goggles for eye protection, and
71	Man wearing Respirator	6) A Respirator
72	Man wearing yellow protective clothing	All of these safety items are essential when using highly toxic pesticides.

SLIDE SET II

Slide No.	Video	Audio
73	Man with respirator in hand	A respirator is of no value unless the cartridges are adequately filtering out the vapor of a pesticide. Cartridges should be changed after eight hours of use or if you smell a trace of the pesticide coming through the cartridges.
74	Man wearing respirator	Make sure the respirator fits tightly against your face.
75	Man wearing respirator and goggles	Be sure to buy the proper number or type of respirator cartridge for the intended use. Specific types of cartridges protect against specific chemical gases and vapors.
76	Stop Tape Change Tray	

SLIDE SET II

Tray 2

Slide No.	Video	Audio
1	Two boys with wagon and pesticides	Proper storage of pesticides is often overlooked. This can result in accidental poisoning of children.
2	Man with ventilator Split Slide	To prevent accidents, store pesticides in a facility which is cool, well ventilated, dry and out of direct sunlight.
3	Glass Container with yellow pesticide	Store pesticides in the original container and have water available in case of accidental spills.
4	Pesticide and feed stored together	Do Not transport or store pesticides near food, feed, or seed.

SLIDE SET II

Slide No.	Video	Audio
5	Lock on storage shed	Always lock a storage shed and post signs indicating the hazardous nature of the materials stored.
6	Drum falling out of truck spilling pesticide	Remember, you are legally responsible for an accident resulting from a pesticide while transporting it from the site of purchase to the use site. To prevent accidents, transport pesticides with care.
7	Man mixing pesticide	When mixing pesticides, always work outside, and keep livestock, pets and people away. It is also a good idea to have someone with you when preparing pesticides for application.
8	Man with rubber gloves	Before handling a pesticide container, be safe and put on protective clothing.

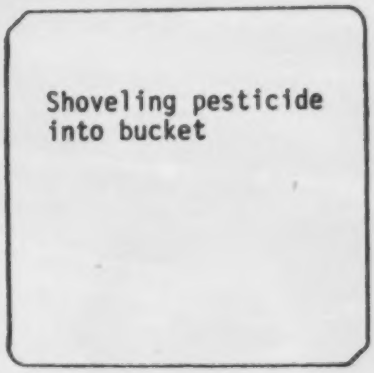
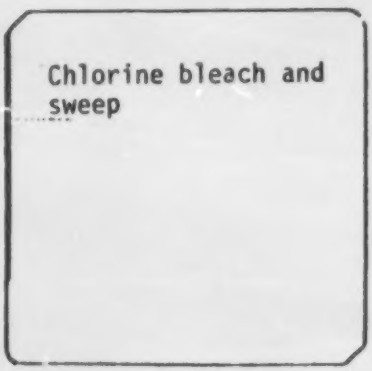
SLIDE SET II

Slide No.	Video	Audio
9	STOP sign	Carefully read the label to determine the amount of protective clothing needed and directions for mixing. Directions may change from year to year with current trends in pesticide laws and classification systems.
10	Cooperative Extension Building	Follow the label recommendations for proper rates or call your local Extension Service representative from information.
11	Cutting bag of pesticide with knife	If pesticides are supplied in bags, reduce chances of contamination by opening paper containers with a sharp knife.
12	Measuring cup	Never use more pesticide than recommended on the label. Accurately measure out the amount called for on the label and only the amount you plan to use.

SLIDE SET II

Slide No.	Video	Audio
13	Hose with leak	Before adding chemicals to your spray applicator, check it over for leaking hoses or connections, plugged or worn nozzles, and seals. This could save you time and prevent accidents.
14	Man putting water in tank	Pesticides should be added to a tank only after water is added. After all the pesticide is added, rinse and drain the pesticide container three times and pour into the tank.
15	Corn field	Application of pesticides should always be done on calm days. Stormy winds increase drift which could cause injury to the applicator, livestock, and other nontarget animals or plants.
16	Can spilling pesticide	Accidental spills or splashes can easily occur if the user is not careful. To void a splash always keep the pesticide container and pesticide below eye level when pouring into a mixing container.

SLIDE SET II

Slide No.	Video	Audio
17	Man wipeing arm with cloth	If an accidental splash occurs, do the following immediately: Remove contaminated clothing. Wash thoroughly with soap and water.
18	Sawdust on spilled pesticide	Consider the following when cleaning up a pesticide spill: 1) Always wear protective clothing. 2) Use clay, sawdust, or an absorbent cleaning compound.
19	 Shoveling pesticide into bucket	3) Sweep or shovel material into a fiber container, cover with a lid.
20	 Chlorine bleach and sweep	4) Scrub area with full strength liquid chlorine bleach (Clorox, Purex) and water.

SLIDE SET II

Slide No.	Video	Audio
21	Large Tank spills on Highway	Major spills resulting from the release of a large volume of pesticide may require different action.
22	Man stopping traffic	After applying any first aid treatments needed, rope off or flag the area to keep everyone out.
23	Man using telephone	Phone the Manufacturer of the pesticide for assistance.
24	Highway Patrol	* If the spill is on a state highway, call highway patrol or state highway department.

SLIDE SET II

Slide No.	Video	Audio
25	Policeman	If the spill is on a county road or a city street, call the county sheriff or city police.
26	State Board of Health Building	If food is contaminated, notify state or federal food and drug authorities or city, county, or state health officials.
27	Pollution Control	If water is contaminated, notify state health officials; regional, state, or federal water quality or water pollution authorities; the state fish and game commission.
28	National Agricultural Chemicals Association	The National Agricultural Chemicals Association has Pesticide Safety Team Network which can tell you the procedure to follow. They will also send a safety team to help clean up a major spill. Call (513) 961-4300.

SLIDE SET II

Slide No.	Video	Audio
29	Garbage Dump	Improper disposal of pesticide containers and pressurized pesticides is one of the main contributors to death, injury and loss to man and the environment.
30	Pesticides in Stream	Pesticides pollute streams and kill thousands of game fish each year. In addition, lakes are being closed as a result of residue build-up.
31	Court Roon	With current laws, it is illegal to dispose of containers improperly. If an individual is found guilty, a fine will be levied.
32	Warning Label	Methods used in disposing of unused pesticides and containers vary.

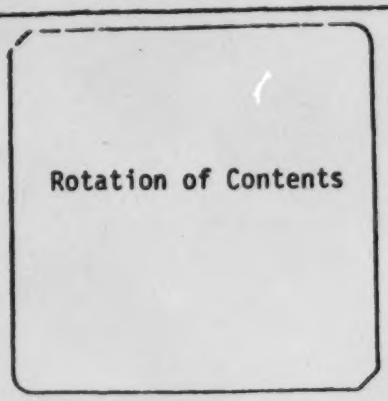
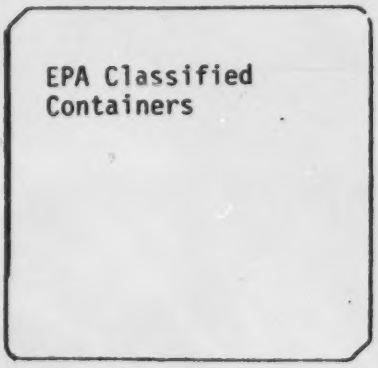
SLIDE SET II

Slide No.	Video	Audio
33	Man on tractor	The Environmental Protection Agency now recommends four basic ways to dispose of unused pesticides. 1) Use them up - The applicator will get better results and save money if the materials are used in control of the target pest.
34	Incinerator	2) Burn them in specially designed pesticide incinerators.
35	Landfill	3) Bury the pesticides in a specially designated landfill.
36	Two Cans of Pesticides Stored	4) If you cannot do any of these things right away, store the pesticides until you can.

SLIDE SET II

Slide No.	Video	Audio
37	Two men at landfill	Some landfills may have specific areas set aside for containers and/or unused pesticides. Consult the County Board of Health for information.
38	Boy playing with pesticide container	Improper disposal of pesticide containers causes many deaths and illnesses each year. Children are often the victims.
39	Spray Tank	To prepare pesticide containers for disposal, let drain an extra 30 seconds into spray tank when emptying.
40	Filling Tank with Water	Fill the container one-third full of water and replace cap.

SLIDE SET II

Slide No.	Video	Audio
41	 Rotation of Contents	Rotate and up-end the container so that the rinse reaches all side surfaces.
42	Spray Tank	Drain the rinse water from the container into the mix tank. Let the container drain for 30 seconds after emptying and
43	Rinse 3 Times	do this at least two more times for a total of three rinses.
44	 EPA Classified Containers	Disposal methods for pesticide containers vary according to the type of container and pesticide.

SLIDE SET II

Slide No.	Video	Audio
45	I. Can be Burned	The environmental Protection Agency has divided containers into three groups based on disposal procedures. Group I. Containers can be burned in an incinerator or in open fields. Be sure to check with state and local officials who regulate open burning.
46	I. Can be Buried	Containers in this group can be buried in specially designed landfills or singly in open fields at least 18 inches below the surface.
47	II.	Group II. Containers which hold organic or metallo-organic pesticides but not organic mercury, lead, cadmium, or arsenic compounds cannot be burned, but may be buried in a sanitary landfill or in a field. Reconditioning firms buy large containers for recycling. These firms buy 30 or 55 gallon drums if 100 or more are stockpiled at one location.
48	III. Rinse and Bury	Containers which hold organic mercury, lead cadmium, or arsenic, or inorganic pesticides are placed in Group III, The only method of disposal is to rinse and bury in a sanitary landfill or if not rinsed bury in a specially designated landfill.

SLIDE SET II

Slide No.	Video	Audio
49	Large Tanks	If your use of pesticides is large enough, you can eliminate containers by using bulk tanks. Aerial applicator firms in many areas are using this method.
50	Tank with measuring Meter	Bulk tanks provide an excellent method of delivering the exact amount of pesticide for calibration without the hazards associated with containers.
51	Specific Information	For exact directions on disposal, read the label on the container. If you have questions, call the local County Extension Agent or the County Board of Health.
52	Produced by the Cooperative Extension Service	

SLIDE SET III

Tray 1

Slide No.	Video	Audio
1	Pest and Pesticides	Pests and Pesticides - Title Slide
2	Insect	There are many living things that compete with men for food and fiber or attack him or his home directly.
3	Insects on Plants	Pests are harmful in a number of ways, they attack animals, damage crops, damage stored foods and feeds, annoy people, damage buildings and create other harmful affects.
4	Pest Varieties	There are four groups which contain a wide variety of pests. Insects (plus mites, ticks, and spiders) Vertebrates Weeds Plant Disease Agents

SLIDE SET III

Slide No.	Video	Audio
5	House in Snow	Insects occur in most environmental conditions, with extremes from deserts to snow covered land areas and even in water. They also have extreme variations in size, shape, color, mouthparts, habits and other characteristics.
6	Bee	All insects are not pests, some are beneficial.
7	Fly with parts labeled	Insects have common features you should recognize. First, an insect's body has three regions, the head, thorax, and abdomen.
8	Fly with parts labeled showing leg attachment	On the second body region, the thorax, three pair of jointed legs are attached.

SLIDE SET III

Slide No.	Video	Audio
9	Fly with parts labeled showing wing attachment	Wings are also attached to the second body region. This is a very important feature in identifying an insect pest. Insects may vary greatly in color, texture, and number of wings. Some adult insects are wingless, but most have four wings.
10	Close up of Larval mouth parts	Another important feature is the mouthparts. Types of mouthparts vary. Insects with chewing mouthparts have jaws with sharp surfaces (like teeth) which enable the insect to bite and tear plant tissue.
11	Insect sucking fluids from another insect	Other insects damage plants and animals by sucking out fluids which cause wilting, deformities or death to plants and weakness, allergic reactions, and diseases.
12	Silverfish	Insects are grouped by their stages of development. For example, some types of insects produce offsprings which do not differ in appearance except in size. One example is the silverfish.

SLIDE SET III

Slide No.	Video	Audio
13	Tarnished plant bug	Other insects have stages similar to the adult, but are often smaller. There is a color difference and they do not have wings. They go through several growth stages until the winged adult emerges. An example is the tarnished plant bug.
14	Stages of a moth	Insects belonging to a third group have stages which do not resemble the adult. This is sometimes called complete metamorphasis. In many situations, the immature larval stage is destructive, while the adult is beautifully colored and non-destructive as in the case of butterflies and moths.
15	Larvae	The forms of larvae are different in color, shape, size, and feeding activity.
16	Damage to binding of book caused by insect feeding	Insects feed on almost everything in nature. For example, bristletails, silverfish and firebrats feed in the home on starch. Damage results to books, clothing, and other articles including glue or sizing made of starch.

SLIDE SET III

Slide No.	Video	Audio
17	Lice on Bird	Chewing lice are extremely hard to see and feed on bits of feathers, scaly skin, and clotted blood, they cause skin irritation and lower egg production.
18	Picture of Sucking Louse	In contrast, sucking lice have piercing-sucking mouthparts which enable them to feed on blood. Generally, they are found on livestock and man.
19	Thrips	Thrips are small insects which appear as specks on a handkerchief. They damage a variety of plants by feeding on rapid growing plant tissue. This causes curling of the leaves, and deforming of the plant.
20	Termites and Ants	Termites have four wings at swarming, others are white and have no wings. They can be separated from ants by the broad jointing of the last two body segments.

SLIDE SET III

Slide No.	Video	Audio
21	Damaged wood	Their characteristic feeding and tunneling through wood results in destruction of wood structures in homes.
22	Cockroach eating cracker	Grasshoppers, crickets and cockroaches all have similar characteristics. Grasshoppers and crickets feed on plant parts; however, cockroach egg laying and feeding habits annoy man in the home, restaurant, and stores.
23	Large population of aphids on stem	Several kinds of pests may be found on ornamental plants around the home. Some of these are aphids, leafhoppers, spittlebugs and scale insects.
24	Insects on flowers	All suck juices from plants. Damage results in color of leaves, reduced yield, vigor, and even death of plants.

SLIDE SET III

Slide No.	Video	Audio
25	Caterpillar	Moths and butterflies provide beauty and harmless feeding habits in the adult stage. However, the larval stages can be extremely destructive to crops. Often larvae are called caterpillars, and are identified by the presence of jointed legs and fleshy legs.
26	Insect eating leaf	Beetles are one of the largest groups of insects. These pests damage field crops, stored grains, forests, and animals and animal products in both the adult and larval stages.
27	Mosquito	Mosquitoes are important carriers of diseases, such as malaria, yellow fever, dengue, and encephalitis.
28	Wigglers in Water	The adult insects have two wings which are different from other groups of insects. Their young, called "wigglers" are different in appearance from the adults and live in water.

SLIDE SET III

Slide No.	Video	Audio
29	Stages of the fly	Flies are also carriers of diseases, such as typhoid fever, cholera, dysentery, and Kala-azar.
30	Removing maggots from animal	The young of flies are called "maggots" and do not resemble the adult. Fly maggots may be found in a variety of places, including plant tissue, roots, organic matter, water, animal tissue, and animal wastes.
31	Wasps nest	Several insects annoy man by their habits or nesting characteristics. Bees, wasps, ants, and sawflies belong to this group.
32	Sting on person	Many of these pests can inflict a painful sting. Multiple bits often called stings by fire ants are serious and often require medical hospitalization or treatment.

SLIDE SET III

Slide No.	Video	Audio
33	Tick	Ticks, mites and spiders are different from insects. They have eight jointed legs instead of six, no wings, and only two body regions instead of three.
34	Tick on Dog's ear	Ticks attach to the skin and feed on blood. Diseases such as Rocky Mountain Spotted Fever, Texas Cattle Fever, and Relapsing Fever are carried by ticks.
35	Spider attacking caterpillar	Most spiders are beneficial because they kill harmful pests; however, occassionally webbing may be annoying and bites can be painful. Bites of the Brown Recluse and the Black Widow spiders can be extremely painful and may require hospitalization.
36	Brown Recluse	The Brown Recluse can be identified by a violin mark on the body region near the head. They are found in attics, closets, and other dark areas in homes or building.

SLIDE SET III

Slide No.	Video	Audio
37	Black Widow	Black widow spiders are generally found outside the home and can be identified by their jet black color with a red spot on the abdomen.
38	Fish and Bird	Another major group of pests are recognized by jointed backbone and are called vertebrate animals. One vertebrate group that you may not recognize as a pest are fish.
39	Life Cycle	Undesirable fish can compete for food that would support desirable fish. Other fish are necessary to complete the life cycle of some parasites that attack man. Most severe are pests that directly attack man.
40	Snake	Reptiles and amphibians occasionally became pests in some local situations. Fear of snakes is a major problem; even though some snakes are beneficial. However, poisonous snakes are extensively dangerous and can kill if medical attention is not received.

SLIDE SET III

Slide No.	Video	Audio
41	Turkey	Birds are extensively important in our environment. They not only destroy pests, but are beautiful creatures.
42	Sparrow's nest	However, in some situations birds can become problems, Often they cause damage to trees, feed on important food crops, fruits and nuts. Nesting can also become a problem. For example, sparrows nest around homes and sometimes infest homes with mites.
43	Rat	Vertebrates also include mammals. Mammals are the largest group of pests in or around the home. They carry diseases, damage food, crops, trees, dams, lawns, clothing, furniture, and buildings.
44	Benefical / Harmful	Our lives depend upon plants. Some plants provide food, clothing and shelter. They protect our soil and wildlife. Others create problems for us. When plants create undesirable conditions, they are called weeds. A weed is a plant growing where it is not wanted.

SLIDE SET III

Slide No.	Video	Audio
45	Weed Control	To know how to control weeds, we must first identify it and know something about how it grows and reproduces.
46	3 Groups of Weeds	Most weeds are classified into three groups. 1) Grasses 2) Broadleaves 3) Sedges
47	Annuals, Bienneials, and Perennials	Another important feature of plants is the growth habits or cycle of growth. Plants are often referred to as annuals, biennials, and perennials.
48	Annuals	Annuals are plants that begin with a germinating seed and complete its life cycle in less than one year.

Slide No.	Video	Audio
49	Summer and Winter annual plants	Not all annual plants grow in the same season of the year. Annual plants are usually referred to as being summer annuals or winter annuals
50	Summer annuals	Summer annuals include those plants which sprout in the spring or early summer, grow, produce seed and die in the fall or winter. Common weeds in this group include cocklebur, crabgrass and morning-glory.
51	Winter annuals	Winter annuals do most of their growing during the cool part of the year. They sprout in the fall or early winter, grow, produce seed and die before summer. Common winter annuals include wild mustard, henbit, chickweed, annual bluegrass, oats, wheat, and rye grass.
52	Biennial plants	Biennial plants live more than one year but less than two. They grow from seed and produce only vegetative growth the first year.

SLIDE SET III

Slide No.	Video	Audio
53	Production of Plant	Production of flowers and fruit occurs during the second growing season.
54	Thistle and Carrot	Examples of biennials include common mullen, thistle, wild carrot and burdock.
55	Perennial Plants	Perennial plants live for more than one year and may live indefinitely. They often lose their leaves in the winter and die back to their main stem or to the ground.
56	Reproducing of Perennial	Besides reproducing from the old stem, perennial plants may reproduce several other ways. Johnsongrass produces new plants from both seed and rhizomes; bermudagrass reproduces from both seeds and stomens,

SLIDE SET III

Slide No.	Video	Audio
		and purple nutsedge can reproduce by tubers and seeds.
57	Purple Nutsedge	
58	Perennial Plant production	Perennial plants are often divided into groups according to their type of reproduction. These include creeping, simple, and bulbous perennials.
59	Creeping Perennials	Creeping perennial plants reproduce by seed, rhizomes and/or stolens. Seldom will one control practice or herbicide treatment control both reproductive forms.
60	Simple Perennials	Simple perennial plants usually reproduce from seeds. Large food reserves are stored in the root system which makes it necessary to apply systemic herbicide which can move through the plant to the root system.

SLIDE SET III

Slide No.	Video	Audio
61	Bulbous Perennials	Bulbous perennials may reproduce by bulbs, bulblets, and seeds. While many bulbous perennials such as wild garlic are monocotyledons, they react differently to herbicides than do grasses.
62	Plant Diseases	A plant disease is any disturbance of a plant that interferes with its structure, function, or economic value. No plant is completely immune to disease-causing organisms.
63	Diseases in U. S.	About 30,000 different diseases occur on economic plants in the United States.
64	Money lost because of plant diseases	Losses to plant diseases are more than $4.25 billion annually -- about 10 per cent of the annual value of agricultural production in the U.S.

Slide No.	Video	Audio
65	Plant Diseases I. and II.	Plant diseases are divided into two groups: The infectious and non-infectious plant diseases.
66	Infectious Plant Diseases	Infectious plant diseases are caused by fungi, bacteria, viruses, nematodes, and parasitic higher plants.
67	Fungi	Fungi are responsible for causing more plant diseases than any other organism. However, not all fungi cause plant diseases. Beneficial fungi cause decay of plant debris and are responsible for the production of antibiotics such as penicillin.
68	8,000 Fungi	There are more than 8,000 fungi that cause over 80,000 plant diseases. These disease-causing organisms are found in abundance everywhere. They can attack the plant from the time the seeds are put into the ground until the crops are harvested.

SLIDE SET III

Slide No.	Video	Audio
69	Stages of Seedling Diseases	Symptoms of diseases caused by fungi range from seed rot to damping-off of the new seedling to leaf spots, wilts, die-backs, stem cankers, galls, and other disorders that may occur on the mature plant.
70	Fungus on Plants Split Slide Diseased Corn - leaf and ear	A fungus is nothing more than a miniature plant which obtains its food from other plants when it carries diseases by its activities or by producing toxic substances which are harmful to the plant.
71	Spore - Seeds	Like higher plants, fungi also produces seed. The seed are called spores or conidia and are spread by wind, water, or carried by insects from one plant to another.
72	Combine in Field	In fact, some fungus spores are carried thousands of miles by wind currents, while others are carried only a short distance in water or infested soil.

SLIDE SET III

Slide No.	Video	Audio
73	Split slide with knots on roots and dead leaves	Some bacteria are beneficial, while others are responsible for plant diseases. Some wilts, soft rots, galls, leaf spots, and die-backs are the result of bacteria.
74	Fungus on dead plants Split Slide - Diseased tomato and cotton leaves	Bacteria are frequently associated with very rapid plant wilt, soft rots with a foul odor, angular shaped leaf spots, and oozing sap from infected tissue.
75	Picture of single-celled bacteria	Bacteria are single-celled, minute plants. If the average size bacteria were lined end to end, it would take 20,000 to make an inch.
76	Picture of Scales	In fact, the average top foot of soil in 1,000 square feet may contain about 20 pounds of bacteria. Yet, 20 trillion bacteria may weigh only one ounce.

SLIDE SET III

Slide No.	Video	Audio
77	70 Billion Bacteria	Bacteria reproduce by dividing. A single bacterial cell divides into two cells, and the two cells divide into four. This can happen as often as every 20 to 30 minutes when temperature, moisture, and food conditions are favorable. Under such conditions, a single bacterium could result in a population of 70 billion within 12 hours.
78	Change Tray	CHANGE TRAY
Tray 2 1	Viruses	Viruses, which are even smaller than bacteria, also cause plant diseases. Virus particles are complex molecules that can only be seen with the aid of an electron microscope. Viruses are neither plants or animals.
2	Split Slide With Diseased Corn	Viruses increase in numbers only within the living cells of plants or animals. They cause diseases such as mosaics, yellows, curly top, spotted wilts, ring spot, stunts, mottles, streaks, and phloem necrosis.

SLIDE SET III

Slide No.	Video	Audio
3	Nematodes	Most parasitic nematodes feed on the roots of plants. They damage the roots and may inject digestive juices into the plants which also cause damage. Nematode feeding reduces the vigor and yields of plants and produces avenues of entry for wilt or rot producing fungi and bacteria. Plants weakened by nematode activity are susceptible to other diseases
4	Split Slide showing roots with Nematode Damage	Root knot nematode is perhaps the most well-known nematode. It occurs on more than 2,000 kinds of plants. However, there are many other nematodes that cause damage to grasses, ornamentals, trees, and vegetable and field crops. The soybean cyst nematode occurs in approximately 400,000 acres of Mississippi soils. It can cause severe yield reduction on susceptible soybean varieties
5	Roots	Some nematodes feed on the outside cells of the roots, others enter the roots and roam around doing their damage inside, while others enter the roots, enlarge, and remain stationary causing galls to develop on the root system.
6	Susceptible Plant	Before infectious plant diseases of any kind can occur, three things must be present in the right combination. First, there must be a susceptible host plant present.

SLIDE SET III

Slide No.	Video	Audio
7	Causal Agent	Second, there must be a causal agent or a disease-causing organism present which can feed and reproduce on the susceptible plant.
8	Environment	Third, there must be favorable environmental conditions present for the development of the causal organism.
9	Favorable Conditions for Disease Development	If the right combination of these factors are present, severe disease development will occur. Somewhat less than optimum conditions will result in a reduction in disease intensity.
10	Favorable Conditions for Disease Development	It is impossible for the disease to occur with only two of these three factors present. Elimination or reduction of any one or more of these factors will result in eliminating or reducing the amount of disease present. In fact, all known controls of all known plant diseases are based upon reduction or elimination of one or more of these factors. Some examples are:

SLIDE SET III

Slide No.	Video	Audio
11	Crop Rotation	Proper crop rotation reduces the amount of disease causing organisms present, which gives a corresponding reduction in the amount of disease present on the susceptible crop grown after the rotation.
12	Use Fungicides	Fungicides reduce the population of the causal fungus present which results in a reduction of diseases present.
13	Resistant Host Plant	Selecting a host plant resistant to a particular disease which may be a problem in the area can reduce diseases.
14	Man and Tractor	In other cases, delaying planting until the environment is more suitable for plant growth and less suitable for development of diseases makes use of the environment as a control measure.

SLIDE SET III

Slide No.	Video	Audio
15	Non-Infectious Diseases 1-4	The second group of plant diseases are the non-infectious diseases. These include the non-living causes of plant diseases, such as nutrient deficiencies, mineral toxicities, lack or excess of soil moisture, too low or high temperature,
16	Non-Infectious Diseases 5-8	lack or access of light, lack of oxygen, air pollution and soil acidity or alkalinity.
17	Helicopter	Pest control is essential to productive crops, good health, and protected structures. Pest control often means reducing or maintaining a pest at levels which are not economically damaging with consideration of effects on the environment. Pest control implies one or more control measures.
18	Pest Control	Before electing to use a pest control method, several basic principles to pest control should be considered. First, identify the pest because further action in control is dependent on proper identification. If identification is uncertain, contact your local county agent.

SLIDE SET III

Slide No.	Video	Audio
19	Pest Control - 2	Secondly, determine the best method or methods of control, always keeping in mind personal safety and adverse effects on the environment.
20	Non-Chemical Methods	Non-chemical control methods are sometimes used singly or in combination with pesticides. Some non-chemical control methods include: 1) Resistant varieties.
21	Cotton Boll	Resistance to pests may be found in animals, weeds, and crops. Many lines or varieties of crops carry resistance to disease and/or insects. For example, hairiness, color, texture, physiology, outward appearance, glands and other factors contribute to resistance to many crop-pest relationships.
22	Mechanical-Physical Control	Any barrier which helps control a pest is often thought of as mechanical-physical control. A variety of methods exist - such as traps, screens, light, sound, temperature, and electricity.

SLIDE SET III

Slide No.	Video	Audio
23	Good Sanitation	Good sanitation provides control in many situations. Often food or filth contributes to infestations of rats, cochroaches, and flies, and must be cleaned up before control can be achieved.
24	Diseases	Diseases often help control both plant and insect pests.
25	Farm Production Practices	Farm production practices, such as early planting dates, planting methods, tillage, and crop rotation contribute to cultural control.
26	Trap Crop	For example, a trap crop serves as a preferred alternative host for the pest and attracts pests into limited areas in a field. These areas will provide a concentrate of pests with more economical control with pesticides.

SLIDE SET III

Slide No.	Video	Audio
27	Biological Control	Biological control employs mites, insects, diseases, and some weed in natural control of a pest. Often beneficial insects are called predators or parasites. Predators will kill and eat their prey.
28	Parasite Eggs on Plant	However, parasites may deposit eggs inside or on the body of the host. The immature stages later kill the host while using it as food.
29	Pesticides	Many situations require more than non-chemical control measures. In these instances, pesticides must be used. Pesticides are chemicals used to destroy, prevent, or control pests and include attractants, repellents, and plant growth regulators.
30	Pesticides - Pests	Pesticides are often named according to pests for which control is desired. For example, insecticides control insects, miticides control mites, nematicides control nematodes,

SLIDE SET III

Slide No.	Video	Audio
31	Fungicides Herbicides Rodenticides	fungicides control fungi, herbicides control weeds, rodenticides control rodents and many others exist.
32	Protectants Sterilant Contact Poisons	Protectants are applied to an animal, plant, structure and product to prevent entry or damage by a pest, a sterilant prevents reproduction, contact poisons kill pests by contact, stomach poisons must be swallowed,
33	Plant showing its Roots	systemics are taken into an animal's blood or through plant sap without hurting the host, but kill a pest upon feeding on the host translocated herbicides are similar to systemics except they kill plants by being absorbed by their plant parts, and others.
34	Pesticide Application	There are several terms that describe the application of pesticides. The terms refer to the stage of growth of both crops and weeds

SLIDE SET III

Slide No.	Video	Audio
35	Tractor in Field	A preplant pesticide is applied before the crop is planted. Herbicides such as Treflan, Cobex, Sutan and Eradicane and others are applied during seedbed preparation and incorporated in the soil.
36	Man Applying Pesticide With Tractor	The most common usage of the term pre-emergence is where the pesticide is applied after planting but before emergence of crops and weeds.
37	Soybeans	Postemergence is commonly used to describe a pesticide application made after the crop has emerged. An example of this is a directed spray of a herbicide to soybeans to control cocklebur.
38	Band Application	Variation between pests should be considered when control application methods are selected. Pesticide application may be accomplished several ways: Some are applied as band applications to a strip or over or along a row of crops.

SLIDE SET III

Slide No.	Video	Audio
39	Broadcast Application	Broadcast is applied to a broad area.
40	Crack and Crevice Application	Direct application to cracks and crevices where pests often hide is called a crack and crevice application.
41	Dip Application	When a plant, animal, or object is immersed in a pesticide, this is a dip application.
42	Directed Application	If the pesticide is aimed at a portion of a plant, animal, or structure, this is called directed application.

SLIDE SET III

Slide No.	Video	Audio
43	Foliar Application	Foliar applications are used for application to leaves of plants, shrubs, or trees.
44	Side-Dress Application	Often pesticides are applied along the side of a row. When this is done, it is called a side-dress application.
45	Soil Incorporation	Soil incorporation is when tillage implements are used to mix the pesticide with the soil. Other application methods exist and should be selected for specific jobs.
46	Organic Matter and Clay	The soil is a complex composition of minerals, chemicals and microorganisms. As a general rule, as per cent organic matter and per cent clay increase, a corresponding increase in the rate of a pesticide must be made to obtain pest control.

SLIDE SET III

Slide No.	Video	Audio
47	Sun and Rain on Plant	Most herbicides work best under good plant growing conditions. Weeds that are stressed from lack of moisture, high temperature or low temperatures will not be controlled as easily by most herbicides.
48	Soil Moisture Influences Pesticide Control	Soil moisture and rainfall vary in their effects on pesticides. Rainfall can wash the pesticide from plants which may reduce control or it may provide the needed moisture to carry a surface applied pesticide into the soil. Excessive rain can reach a pesticide from the upper few inches of the soil and reduce control. The amount of soil moisture has a big influence on the control a soil applied pesticide will provide.
49	Pesticides Which Do Not Kill Pests	There are several materials that are classified as pesticides that are not used to kill pests. Because of their chemical nature they are classified as pesticides.
50	Road With Hedge	Chemicals that speed up, enlarge, or in any other way affect the rate of plant growth are classified as plant growth regulators. They are commonly used to improve the texture, fruit set, yield, firmness, color, size, quality, and maturity of fruit. A plant growth regulator was used in the foreground to regulate the growth rate of this hedge.

SLIDE SET III

Slide No.	Video	Audio
51	Harvest Aid Chemicals - 1.	Defoliants and sometimes desiccants are often referred to as harvest aid chemicals. Devoliants cause leaves to drop from plants thus allowing a more effective harvest of quality crops.
52	Harvest Aid Chemicals - 2.	Desiccant application to plants generally results in complete kill of leaves and other plant parts to dry the unwanted crop and weedy vegetation. Desiccants are commonly applied both prior to planting the crop to destroy weedy vegetation and prior to harvest to reduce moisture and thus speed up the harvesting schedule.
53	Formulation	A formulation is the manner in which the active ingredient (technical chemical material) is mixed with the ineri ingredients.
54	Split Slide - Spoon with Solid Cup with Liquid	Active ingredients may be produced as a solid (crystal or powder) and liquids and must be prepared for use by adding solvents, carriers, sticking, spreading, and emulsifying agents.

SLIDE SET III

Slide No.	Video	Audio
55	Storage 1.-4.	The result is a pesticide which can be stored easily, provides effective application, provides safety, and is economical.
56	Pesticide Types	Most pesticides are formulated into one of the following types: Emulsifiable Concentrates (EC) Flowables (F or L) Aerosols (A) Liquid Gases (Fumigant) Dusts (D) Granules (G) Wettable Powders (WP or W) Soluble Powders (SP) Baits (B)
57	Emulsifiable Concentrates	Emulsifiable concentrates are formulations in which 2 to 8 pounds of the active ingredient (technical material) are concentrated in an oil solution. An emulsifier must be added to mix water.
58	Flowable Formulation	In some situations, the active ingredient forms a semi-solid or pudding like mixture called a flowable formulation. This results from finely ground dust suspended in a small quantity of water.

SLIDE SET III

Slide No.	Video	Audio
59	Man Spraying Wall With Aerosol	Aerosols, used around the home, are formulations in which the active ingredient is dissolved in a solvent which serves as a propellent.
60	Fumigants	Liquid gases, or fumigants, are liquids under pressure, but become gases when released in the air or soil. They must be confined to the area requiring treatment. Fumigants are important in stored grain and soil treatment.
61	Wettable Powders	Formulations which are prepared as dry, finely ground dusts which contain wetting agents added to enable mixing with water are called wettable powders. This formulation contains 15 to 95 per cent active ingredient and forms a suspension in water.
62	CROC SP	In contrast, another dry powdered formulation when added to water forms a true solution and is called soluble powders (SP).

SLIDE SET III

Slide No.	Video	Audio
63	Snail and Slug Bait	For control of rats, mice and some insect pests, bait formulations serve to attract the pest and when eaten kill the pest.
64	Dust	Dusts are very dry formulations which are prepared by combining the active ingredient with a fine powdered inert material. The powdered additive makes these pesticides safer, easier to store and handle since dusts are always used dry.
65	Granular Formulation	Another dry formulation is granules. The active ingredient is applied to course particles larger than dusts which retain the active ingredient. Inert ingredients may be added to provide better handling. Granular formulations are used dry for soil treatments.
66	Ask the Program Coordinator	If you have any questions, ask the program coordinator.

SLIDE SET III

Slide No.	Video	Audio
67	Credits	

SLIDE SET IV - APPLI[illegible] & EQUIPMENT

Tray 1

Slide No.	Video	Audio
1	TITLE SLIDE	Application and Equipment
2	Man in Field with Spraying Machine	Through the ages farmers have dreamed of controlling pests with better methods.
3	Insects Eating Leaf	Man's struggle to produce food for his family and livestock was greatly affected by many types of pests during early pioneer days.
4	Hoeing Cotton	In his struggle to control pests, he tried every technique imaginable. When everything else failed, he used a "surefire" method, the hand and foot.

SLIDE SET IV

Slide No.	Video	Audio
5	3 bags	About 1867, a miraculous discovery was made! Chemicals could be used to control some pests. Some of these earlier chemicals included calcium arsenate, Paris green, and DDT.
6	Man dusting	The new materials, later called pesticides, required new techniques in application and some specialized equipment. Most of the early pesticides were dusts, and the first piece of equipment was probably an old sock or cloth filled with dust.
7	Airplane	With the development of pesticides, new or more modern techniques for application resulted.
8	Pesticide - Target	Successful application of pesticides depends on the ability to deliver the material to the target with best possible results without side effects or high cost.

SLIDE SET IV

Slide No.	Video	Audio
9	Use Proper Equipment	Good control cannot be obtained without proper equipment. Application equipment should be carefully selected on the basis of the job to be done. Keep in mind that a sprayer should be: 1) designed for the intended job, 2) durable, and 3) convenient to fill, operate, and clean.
10	Control Factors 1. - 5.	In addition to equipment, successful control of a pest depends on several other factors. Some of these include: 1) proper formulation, 2) pesticide compatability, 3) weather and drift problems, 4) timing of the application 5) accurate calibration.
11	Forms of Pesticides	Today's pesticides are applied as sprays, granules, dusts, gases (vapors), fogs, rubs, or dips.
12	Equipment on store shelves	Application includes a variety of methods, with each method and type of equipment having advantages and limitations.

SLIDE SET IV

Slide No.	Video	Audio
13		Sprayers may range in size from small hand sprayers to large self-propelled units.
14		Some jobs may require hand sprayers. These are extremely effective in home gardens,
15		in the home and for lawn and ornamental pest control.
16		The real advantages of hand sprayers for small jobs are their low cost and their light weight, making them very portable and easily operated.

SLIDE SET IV

Slide No.	Video	Audio
17	Small Power Sprayer	Small power sprayers are selected for jobs too large for hand sprayers, but not large enough for row-crop equipment. These jobs include large gardens and small nurseries.
18	30 Gal. Sprayer	Small capacity sprayers normally deliver between 1 to 3 gallons per minute and develop pressure up to 250 psi. Power for spraying is through an air-cooled engine of 1 1/2 to 5 horsepower. Tank sizes range from 12 to 30 gallons.
19	Small Capacity Sprayer Advantages	A variety of small capacity sprayers is available, but all have basically the same advantages and limitations. The advantages include: 1) low cost 2) simple construction 3) easy to use, clean, and store
20	Small Capacity Sprayer Limitations 1. - 3.	Some of the limitations include: 1) small capacity 2) uneven application rate because of hand operation 3) frequent lack of good agitation

SLIDE SET IV

Slide No.	Video	Audio
21	Low Pressure/Volume Sprayers	Larger jobs, including most spraying on general farms, such as weed control for row crop, grain, pasture, fence rows, and cattle, can be done with low pressure sprayers.
22	Sprayer pulled by Tractor	These sprayers can be mounted on a tractor, be pulled or self-propelled. Materials such as herbicides, insecticides and fertilizers can be applied with low pressure sprayers.
23	Big Tractor with Sprayer	These sprayers are operated within a range of 30 to 80 psi*. Tank sizes range from 50 to 200 gallons. The spray material is agitated hydraulically. *Pounds per square inch.
24	Low Pressure Volume Advantages 1.-6.	The low pressure/volume sprayer has several advantages. These are: 1) high capactiy 2) medium to large tanks 3) low cost 4) light weight 5) versatility 6) hydraulic agitation

SLIDE SET IV

Slide No.	Video	Audio
25	Low pressure volume Limitations 1. - 2.	These sprayers also have limitations which include: 1) low gallonage will not permit adequate coverage for some pest control situations 2) the low pressure may reduce the pesticide's penetration for some specialized jobs.
26	Man with tank sprayer	When complete coverage is necessary, and penetration of dense foliage is required, high pressure sprayers are usually selected. These sprayers are sometimes called hydraulic or high pressure sprayers.
27	Large Tank Sprayer	Very large tanks are used to deliver high gallonages such as 100 gallons or more per acre. High pressure pumps can deliver up to 25 gallons per minute at 400 to 500 psi. Hand guns can also be used.
28	Hydraulic Sprayers Advantages 1. - 3.	Hydraulic sprayers are good for special jobs. They are well built and have good mechanical agitation. These sprayers usually last a long time even with the use of wettable powders.

SLIDE SET IV

Slide No.	Video	Audio
29	Hydraulic Sprayers Limitations 1. - 3.	Some limitations of high pressure sprayers include: 1) high cost 2) large volume of water, power and fuel 3) high pressure which makes a spray that drifts easily and causes waste.
30	Air Blast Sprayers	If an applicator wants to apply pesticides with either high or low volumes of spray for certain jobs, he may select an air blast sprayer.
31	Air Blast Sprayer Nozzles	Air blast sprayers use air to transport spray droplets from nozzle to the target.
32	Air Blast Sprayer Fan	A high volume of air supplied by fans is directed to one or both sides of the sprayer as it moves between rows of trees or across a field.

SLIDE SET IV

Slide No	Video	Audio
33	Air Blast Sprayer Spraying Trees	The nozzles deliver the pesticide to the high velocity stream of air from the fan which serves to break up large droplets. Small droplets are then transported by air to the target.
34	Air Blast Sprayer Advantages 1. - 4.	This type equipment provides good coverage and penetration and can be operated at low pump pressures. It also requires less water, and less labor.
35	Air Blast Sprayer Limitations 1. - 3.	However, these sprayers can create hazardous drifts which could result in overdosages. Small areas cannot be easily treated with air blast sprayers.
36	Ultra Low Volume Sprayers	Ultra low volume sprayers provide a means of spraying the concentrated chemical without dilution with water or any other carrier.

SLIDE SET IV

Slide No.	Video	Audio
37	Aerial MLV Volume Sprayers	Spraying is usually done at rates of one-half gallon or less per acre and may be done from the air or the ground.
38	Ultra Low Volume Split Slide	Ground ULV sprayers have a fan which sets up high speed air currents that break up and transport the concentrated spray droplets.
39	Ultra Low Volume Advantages	The advantages of this type of equipment is that no water is needed and large acreages can be covered without refilling the tank.
40	Ultra Low Volume Limitations	The limitations generally outweigh the advantages, except in specific situations. For example, high concentrations are usually hazardous to use and could result in an overdose to the applicator. In addition, only a small number of pesticides can be used this way.

SLIDE SET IV

Slide No.	Video	Audio
41	Applicator Studying Guide To Equipment	If a sprayer is purchased, the applicator must have a thorough understanding of how to operate the equipment. Studying available literature is the first step.
42	Tanks	The operator should understand the parts of a sprayer as well as the use and care of it. The largest feature of most sprayers is the tank.
43	Filling Tank	Always buy a tank with an opening large enough for easy filling and cleaning.
44	Picture of Tank	Tanks should be built of materials that will resist rust, such as stainless steel, fiberglass, polyethylene, or aluminum. In some cases a plastic protective coating inside the tank is used.

SLIDE SET IV

Slide No.	Video	Audio
45	Drain on Pump	A good drain system is necessary for cleaning. Outlets should be sized to the pump's capacity. A sight gauge is helpful in keeping the tank from being completely emptied.
46	Water flushing through nozzle	Cleaning is essential for efficient operation of the equipment. Flush out the tank, pump, lines and nozzles after each day's use and each pesticide used. Always refer to the label for special cleaning instructions.
47	Cleaning Sprayer	Some tips for thorough cleaning of the sprayer include: 1) Hose down the inside of the tank and partially fill it with water. Flush the cleaning water through the nozzle by operating the sprayer. 2) Flush with clean water.
48	Cleaning Parts of Sprayer with Tooth-Brush	3) Remove nozzle tips and screens. Clean them in strong detergent solution or kerosene, using plastic nozzle cleaners, round wooden toothpicks, and a soft brush such as an old toothbrush. Be sure to wear rubber gloves!!

SLIDE SET IV

Slide No.	Video	Audio
49	Man Putting Detergent in Tank	4) Fill the tank with 30 to 40 gallons of water and add one pound of laundry detergent powder in liquid form to produce a sudsy solution.
50	Solution Coming Through Sprayer	5) Operate the pump to circulate the detergent solution through the sprayer for about 1/2 hour. Then flush it out through the boom.
51	Man Showing Scale on Side of Tank	6) Fill the tank with 30 to 40 gallons of clear water and flush through the boom.
52	Ammonia and Activated Powder Charcoal	For cleaning 2,4-D or an organophosphate from a sprayer, add one pound of activated powdered charcoal with the detergent. Other methods are also available, such as a mixture of household ammonia and water.

SLIDE SET IV

Slide No.	Video	Audio
53	Pumps	The pump is the heart of a sprayer. It must: 1) Supply all nozzles. 2) Allow hydraulic agitation if used. 3) Leave a reserve to allow for loss of flow due to wear.
54	Corroded Part of Pump	Spray pesticides often have corrosive effects on pump parts. Parts which resist corrosion and abrasions should be selected.
55	Picture of Pump	There are basically three types of pumps used on sprayers. Centrifugal pumps provide high volume at low pressure. These pumps are not self-priming, but they resist wear from abrasive materials. They may operate at high speeds ranging from 2,000 to 4,000 rpm.
56	Centrifugal Sprayer Pump Diagram	Pressure is produced by an impeller rather than one part rubbing against another. Centrifugal sprayer pumps have high volume capacity (up to 125 gallons per minute) but their low pressure limits them to applications of 50 psi or less for each single impeller unit.

SLIDE SET IV

Slide No.	Video	Audio
57	Piston Pumps	Piston pumps provide moderate to high volumes at high pressure and are self priming. They normally operate at lower speeds ranging from 540 to 1000 rpm.
58	Diagram of Piston Pumps Split Slide	These units operate up to 600 psi or more. They are high in cost and low in volume, but are wear resistant. These pumps are used where high pressure is required for operation of a handgun, for shade tree spraying or boom sprayers for insecticides and fungicides.
59	Roller Pump	Other types are roller and gear pumps. These pumps provide moderate volume at low to moderate pressure. They operate at lower speeds ranging form 540 to 1000 rpm.
60	Roller Pump Diagram	Roller pumps are widely used because of their low cost, self-priming, wide range of pressures and direct mounting on a PTO shaft.

SLIDE SET IV

Slide No.	Video	Audio
61	DON'TS	Some don'ts should be considered before using a pump. For example, never allow corrosion to build up on a pump. Never operate a pump that is dry or that has a restricted inlet. Improper mounting of a pump can also create a serious problem.
62	Strainers	Strainers are for the protection of spray equipment. They filter out debris that causes wear of precision parts, such as the nozzle and pump. Strainers also prevent clogging of the nozzle.
63	Strainer Mesh	Strainers should have screens decreasing in mesh size from the pump to the nozzle. For example, the filler opening should have a 12 to 25 mesh, the suction or supply line to the pump requires a 15 to 40 mesh and a 50 to 100 mesh screen between the pressure relief valve and the boom. The nozzle assemble may need a 25 to 100 mesh screen, depending upon the size of the nozzle tip.
64	Hoses	Hoses should be selected with care for sprayers. Many factors should be considered before buying a hose.

SLIDE SET IV

Slide No.	Video	Audio
65	Characteristics 1. - 3.	A hose should be made of resistant rubber or plastic which has burst strength greater than the peak operating pressures. Hoses should be weather-resistant and should resist the effects of oil and solvents present in pesticides.
66	Suction Hoses	Suction hoses should be larger than pressure hoses and be composed of materials which will resist collapse. All fittings should be equal to or larger than the suction lines. Worm screw type clamps are best and are needed when the operating pressure exceeds 100 psi. If the pressure exceeds 300 psi, use two worm screw type clamps.
67	Flow Rate Guides	Hoses should be used according to the requirement for the sprayer based on gallons per minute flow rate.
68	Hoses Picture Of	When hoses are not being used in off season, remove and store out of sunlight. But before storage always rinse the inside and outside of a hose.

SLIDE SET IV

Slide No.	Video	Audio
69	Pressure Gauges	Pressure gauges are extremely important in regulating the amount of spray applied to the target. They give you a visual interpretation of how much pressure is put on the hoses and other parts of your sprayer.
70	Close up of Pressure Gauges	Gauges provide a range in pressure which can be regulated; however, always use the lowest possible pressure for the job. High pressure increases hazards through drift, causes more wear on the equipment, and requires extra power. Pressure gauges are important in calibration.
71	Pressure Regulators	Pressure regulators should have a working range which corresponds with the desired operating pressure of the nozzle.
72	Agitators	Without proper agitation, a non-uniform application will occur. This can also result in excessive pump wear.

SLIDE SET IV

Slide No.	Video	Audio
73	Mechanical Agitation	Sprayers used for large orchards and vegetable pest control may have mechanical agitation. Mechanical agitation is expensive and usually more difficult to maintain than hydraulic.
74	Diagram of By-Pass Unit	Hydraulic agitators are used in field sprayers. One type hydraulic agitator is the By-Pass unit. By-Pass agitators are good for solutions and emulsions.
75	Hydraulic Agitation Jet Type	Jet agitators are used on field sprayer tanks for hydraulic agitation. The size jet or agitator is selected based on volume of flow and tank size. Adequate operation is especially important when using wettable powders.
76	Control Valves	Control valves should be convenient and easy to operate. Control valves should allow cut off flow to the nozzles.

SLIDE SET IV

Slide No.	Video	Audio
77	Stop Tape Change Tray	
Tray 2 1	Nozzle	Nozzles are the final discharge point of the liquid. They are selected to control rate of application, particle size, and pattern of spray.
2	Different Types of Nozzles	All nozzles should be the same type and size. Otherwise, excessive amounts or not enough pesticides may be applied.
3	Wrench Tightening Nozzles	When tightening a nozzle cap, twist it until it is snug, do not overtighten or crack the cap.

SLIDE SET IV

Slide No.	Video	Audio
4	Leak	Carefully check for leaks in lines, valves, seals, and the tank.
5	Adjustment of Nozzles	Adjust the nozzle height and spacing according to the crop or weed for which control is necessary.
6	Split Slide Large Spraying Unit/ Jar of Pesticide	The rate and pattern of spray depends on nozzle design or type and its:
7	Pressure Gauge	Operating Pressure

SLIDE SET IV

Slide No.	Video	Audio
8	Orifice Size	Orifice size
9	Discharge Angle	Discharge angle
10	Distance from the Target	and distance from the target.
11	Nozzle Spray Pattern Types	Insect, weed and disease pests require different control procedures based on different delivery patterns, spray angles, and discharge rates. These factors contribute to the classification of nozzles based on spray patterns.

SLIDE SET IV

Slide No.	Video	Audio
12	Full Cone	The solid cone is normally used for spot spraying where the entire plant needs to be covered.
13	Wide Flat Spray	The flat fan nozzle pattern is used in broadcast and boom spraying. The type pattern must be overlapped. A narrow oval pattern with lighter edges is made by a regular flat fan nozzle.
14	Type K	Herbicides and fertilizer solution may be applied with flooding nozzles. These produce a wide spray pattern and are used at low pressures. This is normally used where larger droplets are permissible.
15	Even Spray Flat Spray	For band spraying with a uniform pattern across its width, an even spray flat fan nozzle can be used.

SLIDE SET IV

Slide No.	Video	Audio
16	Cone Jet Hollow Cone	For thorough coverage and uniform distribution over crop foliage, select a Hollow Cone Nozzle. The pattern produced by this nozzle is circular with tapered edges with little or no spray in the center. These nozzles are used for moderate to high pressure spraying. These are normally used as insecticide nozzles.
17	Disc Type Full Cone	Full cone nozzles as well as hollow cone are designed for spraying at high pressure (40-400 psi) where complete coverage is important and drift is not a hazard. The full cone nozzle produces a solid or well distributed spray through the pattern.
18	Boomless Spray	The boomless nozzle provides a wide spray and is more affected by wind.
19	Maximum Effective Coverage	However,these nozzles are used when a wide swath is desirable. These nozzles are usually mounted as one or as a cluster of nozzles. This nozzle is not recommended for general use.

SLIDE SET IV

Slide No.	Video	Audio
20	Brass	Nozzles come in variety of materials, each with its own features. Brass is the most common nozzle material. Nozzles made of brass are the best for limited use. They are inexpensive, but wear quickly from abrasion.
21	Stainless Steel	Stainless steel provides resistance to corrosion and abrasion.
22	Plastic	Plastic resists corrosion and abrasions, but swells when exposed to some liquids.
23	Aluminum	Aluminum resists some corrosive materials, but is easily corroded by some nitrogen fertilizers.

SLIDE SET IV

Slide No.	Video	Audio
24	Tungsten Carbide and Ceramic	Tungsten carbide and ceramic materials are the most expensive. These materials are highly resistant to abrasion and corrosion, and should out last other nozzle materials.
25	Uneven ground conditions	Uneven ground conditions can cause application rates to vary by 50 per cent and can produce uneven patterns. To prevent this, reduce speeds and recalibrate equipment.
26	Spray storage tips: 1. - 3.	To prepare the spray rig for off season months and improve the service for your sprayer, consider the following tips: 1) First, rinse the system, 2) Fill the tank almost full of clean water, 3) Add a gallon or two of new light oil to the tank,
27	Spray Storage tips: 4. - 6.	4) Coat the system by pumping tank contents out through the nozzles or handgun 5) Drain the pump and plug its openings or fill the pump with light oil or anti-freeze, 6) Remove nozzles and screens and store in light oil or diesel fuel.

SLIDE SET IV

Slide No.	Video	Audio
28	Dusters and Granular Applicators	Other methods for applying pesticides include duster and granular applicators. Handdusters are widely sold on the market for small jobs around the home and garden.
29	Hand Dusters	This type duster consists of a squeeze tube or shaker, an oblong tube, or a fan powered by a hand crank.
30	Handdusters Advantage 1. - 3.	The main advantage of the handduster is that pesticides are bought ready to apply, so they are faster and easier to use. Handdusters are usually relatively inexpensive.
31	Handdusters Limitations 1. - 5.	Dusters do have some limitations: The high cost of pesticides, poor coverage, and dust is subject to drifting.

SLIDE SET IV

Slide No.	Video	Audio
32	Handduster mounted on tractor	Dusters vary from knapsack or backpack types to those mounted on or pulled by tractors. Power dusters use a fan or blower to propel dust to the target.
33	Power Duster Advantages 1. - 3.	Most power dusters are simply built and easy to maintain.
34	Power Dusters Limitations 1. - 2.	However, they produce drift hazards. The high cost of pesticides associated with the use of power dusters is another limitation.
35	Granular Applicator	Most granular materials are applied with granular applicators on ground equipment; however, aircraft spreaders are available. Granular applicators are sometimes used as separate units, but are most often used in connection with equipment such as planters

SLIDE SET IV

Slide No.	Video	Audio
36	Granular Applicator Advantages 1. - 3.	The advantages of granular application are the elimination of mixing, low cost, and lack of drift hazards.
37	Granular Applicator Limitations 1. - 4.	Limitations are high cost for pesticide, limited use on some pests because granules won't stick to most target pests, need to calibrate for each granular formulation, and poor lateral distribution, especially on side slopes.
38	Granular Applicator Flow Gauge	In selecting a granular applicator, choose one that has positive control of granular flow.
39	Using Granular Applicators	When using granular applicators always maintain a uniform speed and consider the ground conditions when you calibrate and adjust the speed.

SLIDE SET IV

Slide No.	Video	Audio
40	Plastic covering on bags of pesticides	Fumigants are used primarily for soil disease and nematode control. Some funigants are used to control soil insects and weeds. Fumigators are available to handle low pressure or high pressure fumigants.
41	Fogger	Air atomizing or penumatic nozzles, spinning discs, and small nozzles at high pressure are used by aerosal generators. Thermal generators produce fogs by using heated surfaces.
42	Fog and Aerosal Generators Advantages	Some of the advantages of aerosal generators and foggers are efficient distribution of liquid pesticides in enclosed spaces, efficient distribution of liquid pesticides in dense foliage, and some devices are automatic in operation.
43	Aerosals and fogs Limitations	However, aerosals and fogs are extremely sensitive to drift and repeated applications are needed to maintain effectiveness.

SLIDE SET IV

Slide No.	Video	Audio
44	Hand - operated machine	Most hand-operated or permanently mounted automatic machines are for use indoors.
45	Thermal Fog Application	Before using an aerosol generator and fogger, make sure the pesticides used in them are registered for such use.
46	Calibration	Calibration is the process of adjusting spray equipment so it will put out the correct rate. For specific information call your County or State Cooperative Extension Service office.
47	Correct Calibration	Correct calibration depends on three factors: 1) Discharge or flow rate of material 2) Ground speed 3) Width of application per discharge device (Nozzle spacing, row spacing, etc.

SLIDE SET IV

Slide No.	Video	Audio
48	Ways to Calibrate	There are many ways to calibrate a sprayer but one basic approach considers: 1) speed, 2) pressure, 3) orifice or nozzle size.
49	Instruction Manual	Before calibrating, make these quick checks: 1) See if the nozzle, screen and other related parts are clean and positioned at the right height or spacing.
50	Nozzle	2) Make sure all nozzles are the same type and size.
51	Containers under Nozzles	3) Check all nozzles for spray pattern uniformity. This is determined by placing an identical container under each nozzle. All containers should fill at an equal rate. Replace nozzles that do not fill containers at an equal rate.

SLIDE SET IV

Slide No.	Video	Audio
52	Acre Method Collect 1. - 3.	One way to calibrate a sprayer is by the acre method. First select the speed, pumping pressure, and nozzle size for your job.
53	Adding water to tank	2) Add water to the spray tank and spray one acre as if applying pesticide.
54	Measuring amount of water in jug	3) Measure the amount of water required to refill the tank. The number of gallons required to fill the tank is your application rate per acre at the particular pressure, speed and nozzles used. If 8 gallons were needed to refill the tank, then the rate would be 8 gallons per acre.
55	Label showing application rate per acre	Wait just a minute. What if the pesticide label recommends a higher or lower rate than you are applying? You can solve this problem in one of three ways.

SLIDE SET IV

Slide No.	Video	Audio
56	Pressure	First, change the application rate by changing the pressure. By lowering the pressure you will spray less pesticide, however, higher presure delivers more spray.
57	Pressure Changes Poor Method	However, changing the pressure is a poor method to change application rate because pressure changes result in distorted nozzle patterns and droplet size.
58	Better Method speed	A better method is to change the speed of your sprayer provided nothing else is changed. For example, a lowered speed will deliver more spray, a higher speed results in less spray delivered.
59	Reduce Speed	This is a practical method for small changes in the delivery rate. If you drive half as fast, the delivery rate doubles.

SLIDE SET IV

Slide No.	Video	Audio
60	Nozzles	Another method for adjusting application rate is to change nozzle tips according to the amount of pesticide you want delivered. By changing to tips with larger holes more pesticide will be sprayed. The opposite is true for tips with smaller holes.
61	How Much?	Now that we have determined the amount of water to put in the spray tank - based on the amount delivered per acre in the trial run - the next step is to find out how much pesticide to add.
62	Gauge showing how many gals. tank will hold	To do this, you must know two things: First, how many gallons your sprayer tank holds.
63	Label Directions Vegetables	Second, the amount of formulation to be used per acre. This is based on the recommendation described on the pesticide label.

SLIDE SET IV

Slide No.	Video	Audio
64	Example	For example, suppose your sprayer tank holds 50 gallons of spray. The label recommends applying one pint of formulation on each acre. Remember that you found your sprayer applied 8 gallons per acre.
65	Acres one tank load will spray	First, Determine the number of acres one tank load will spray. Divide 50 gallons by 8, and this gives 6 1/4 acres per tankful.
66	Amount of formulation to spray one tank full	Next, find the amount of formulation you must add to the tank to spray 6 1/4 acres with one pint per acre. To do this, multiply 1 pint by 6 1/4 and you get 6 1/4 pints per tankfull.
67	Example	What if the formulation is a 50 per cent wettable powder and you want to apply 1 pound of active ingredient per acre? First, determine how many pounds of formulation are needed to apply.

SLIDE SET IV

Slide No.	Video	Audio
68	There is 1/2 lb. of active ingredient	When using a 50% wettable powder pesticide there is a half pound of active ingredient in one pound of formulation.
69	1. Determine how much formulation is needed	First - Determine how many pounds of formulation are needed to apply one pound of active ingredient per acre. To do this divide the amount of active ingredient desired by the amount of the active ingredient contained in a 50% wettable powder formulation So you must use 2 pounds of formulation for each acre your sprayer will cover.
70	Find how many lbs. to spray one tank full	Next, find the amount of formulation to spray one tankfull. To do this - multiply 6 1/4 by 2 and you get 12 1/2 pounds of 50% wettable powder per tankfull.
71	Filling Hopper	After you start spraying, recheck the calibration to see if you are spraying the same number acres for each tankful as calculated.

SLIDE SET IV

Slide No.	Video	Audio
72	Reading Directions	Here are some tips for calibrating duster and granular applicators: First, read the manufacturer's operator's manual if one is available.
73	Weigh amount to refill hopper	Fill hopper to a level wich can be measured.
74	Driving tractor	Adjust throttle to normal working speed, and operate the equipment over a measured 1/4 acre or distance.
75	Scales	Weigh the amount required to refill the hopper. That amount is your rate of application.

SLIDE SET IV

Slide No.	Video	Audio
76	For proper application rate	However, if the amount applied does not fall within 5 per cent of the recommended dosage described on the label, you must reset the gate opening and repeat the previous three steps.
77	Recording hopper fillings	Keep a record of the acreage treated with fillings of the hopper. From this, the slight adjustments can be made to maintain proper calibration.
78	Ask your program coordinator	If you have any questions on application and equipment ask your program coordinator.
79	CREDITS	

PRIVATE APPLICATOR TRAINING

MEETING FOR CERTIFICATION

9:30	Registration
9:45	Opening Remarks
	Background Statement Purpose Training and Certification Review
10:00	Laws and Regulations
	Discussion
10:30	Break
10:45	Label, Safety, and Environment
	Discussion
11:45	Lunch
1:30	Application Equipment and Techniques
	Discussion
2:20	Break
2:30	Pests and Pesticides
	Discussion
3:30	Announcements
3:45	Adjourn

Active Ingredient ** Trade Name On OSI Computer	Common Name/Chemical Name *
FUNGICIDES	
None	acrolein
None	bis(tributyltin) sulfide (R)(D)
None	chlorinated levulinic acids
Actidione	cycloheximide (H)
Biomet-14	diphenylstibene 2-ethylhexoate
None	ethylene oxide (I)(D)
None	formaldehyde (D)
None	hexachlorobenzene
None	methyl bromide (I)(H)(R)
None	methly isothiocyanate (H)(I)(D)
None	pentachlorophenol (I)(H)(R)(D)

Active Ingredient ** Trade Name On OSI Computer	Common Name/Chemical Name*
HERBICIDES	
None	allyl alcohol (F)
None	dinoseb and salts (I)
INSECTICIDES	
Systox	demeton
Dichlorovos DDVP Vapona	2,2-dichlorovinyl dimethyl phosphate
Disulfoton Di syston	o,o-diethyl S-(2-(ethyl thio) ethyl) phosphorodithioate
Fensulfothion Dasanit	o,o-diethyl o-(p-(methylsulfinyl) phenyl) phosphorothioate
Zinophos	o,o-diethyl o-2-pyrazinyl phosphorothioate
Arbanol DEE	2-(2-(2-N,N-diethylamino) ethoxy) ethoxy) bornane

Active Ingredient ** Trade Name On OSI Computer	Common Name/Chemical Name *
INSECTICIDES - continued	
Matacil	4-(dimethylamino)-M-tolyl methyl carbamate
Bomyl	dimethyl 3-hydroxyglutaconate dimethyl phosphate
Methyl Parathion	o,o-dimethyl o-p-nitrophenyl thiophosphate
Azinphos Methyl Guthion	o,o-dimethyl S-((4-oxo-1,2,3-benzothriazin-3(4H)-YL)-methyl) phosphorodithioate
Azodrin	dimethyl phosphate of 3-hydroxy-n-methyl-cis-crotonamide
Monitor	o,S-dimethyl phosphoramidothioate
None	dioxathion
Thiodan	endosulfan
None	endrin (R)
Mocap	ethoprop
None	ethylene dichloride (R)
Nemacur	ethyl 4-(methylthio)-m-tolyl isopropylphosphoroamidate (I)

Active Ingredient ** Trade Name On OSI Computer	Common Name/Chemical Name *
INSECTICIDES - continued	
EPN	o-ethyl o-(p-nitrophenyl) phenyl-phosphonothioate
Dyfonate	o-ethyl s-phenyl ethylphosphono-dithioate
Metasystox-R Oxydemetonmethyl	S-(2-(ethylsulfinyl) ethyl) o,o-dimethyl phosphorothioate
None	hydrocyanic acid (R)
None	methidathion
Phosdrin	mevinphos
Lannate Nudrin	methomyl
Schradan	octamethylpyrophosphoramide
None	parathion
Thimet	phorate
Sulfotepp	o,o,o,o tetraethyl dithio-pyro-phosphate
TEPP	tetraethyl pyrophosphate

R = Rodenticidal Action

D = Disinfectant Action

H = Herbicidal Action

I = Insecticidal Action

F = Fungicidal Action

* Underlining of common name/chemical name indicated all products/uses presumptively restricted.

** Pesticides involved in hearings and other regulatory proceedings e.g., Mirex, chlordane and heptachlor were not considered in the development of this list to avoid prejudgement of proceedings outcomes. In addition, this list is in its developmental stages and does not include all those pesticides that could no restricted due to acute oral hazard of other "environmental hazards."

GENERAL STANDARDS

CORE MANUAL TRAINING SCHEDULE 1976

MSU	Greenville	Jackson	Hattiesburg
Jan. 20	Jan. 21	Jan. 27	Jan. 28
Feb. 3	Feb. 5	Feb. 10	Feb. 11
Feb. 17	Feb. 18	Feb. 26	Feb. 25

Specific Standards Training Schedule 1976

	Category	MSU	Greenville	Jackson	Hattiesburg
1.	Agricultural Plant and Animal	March 3	March 4	March 11	March 10
2.	Forest Pest Control	March 17	March 19	March 25	March 24
3.	Ornamental and Turf Pest Control	April 8	April 7	April 15	April 14
4.	Seed Treatment		April 21		
5.	Aquatic Pest Control			April 22	
6.	Right-of-Way Pest Control	April 28	April 27	May 4	May 6
7.	Industrial, Institutional, Structural and Health Related Pest Control	May 12	May 13	May 20	May 19
8.	Public Health Pest Control	May 25	May 27	June 3	June 2
9.	Regulatory Pest Control	(to be announced)			
10.	Demonstration and Research Pest Control	June 9	June 10	June 17	June 16
11.	Aerial Application	Feb. 5 - (Biloxi)		(other time to be announced)	

MSU - Dorman Hall Auditorium

Greenville - Extension Building Auditorium

Jackson - Extension Auditorium

Hattiesburg - Multi-Purpose Auditorium